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TITLE OF THE INVENTION

SYSTEM FOR PROCESSING PROGRAM INFORMATION

BACKGROUND OF THE INVENTION

Field of The Invention

5   The present invention relates to a system for

processing program information capable of efficiently

displaying program information to audience.

Description of the Prior Art

        In recent years, programs and image information

10   are broadcast and transmitted through a large number of

channels because of the spread and progress of satellite

broadcasting, satellite communication and so on. In the

case of sending information of such a program or the like,

that is, program information (program guide) to audience,

15   because of the large number of the channels, of course,

the number of frames of a program table also becomes large.

There are various proposals for sending or displaying

easily to understand and efficiently this program table to

the audience. As such a prior art, for instance, there is

20   a program information processor (display device) shown in

the Japanese Patent Laid Open No. 83888/1997. This

program information processor includes first memory means

for storing program information, second memory means for

storing designation information for a program retrieval

25   input by an audience, retrieving means for retrieving a

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program in program information on the basis of designation

information, program construction control means for

constructing a program table based on the retrieval result

and displaying it, and program selection means in which

5   the audience selects a program from the program table.

When the audience inputs designation information, a

program meeting the condition of the designation

information is retrieved from large quantities of program

information to make the program table. Designation

10   information called in this prior art includes, for

instance, the present time, established charge information

and information of a viewed program. As an instance, when

the present time is input as designation information, a

program capable of being broadcast at present is retrieved.

15   As another instance, when information of the viewed

program is input as designation information, a program

which has not been retrieved is retrieved. Of course,

plural items of designation information can be input in

one operation. As the program table made as a result of

20   the retrieval, a table in which various channels are

arranged along the vertical axis and time slots are shown

along the horizontal axis as described in the above

official gazette, is provided. As a matter of course, the

relationship between the vertical and horizontal axes may

25   be reversed. It is also possible that the time slots are

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arranged along the vertical axis and the various channels
are shown along the horizontal axis as a program table
carried on a general newspaper even at present.

However, in such a prior art program information
5   processor, because a program based on the condition of
designation information is retrieved by inputting various
pieces of designation information and a program is
focussed in accordance with the taste or demand of the
audience, there is the advantage that the audience as a
10   user becomes easy to select a program, but the program
table made by this program information processor has
merely the two-dimensional display construction in which
two attributes of channel and time slot are used as two
axes of the vertical axis and the horizontal axis as
15   described above. After all, it is a table of merely
deleting or culling programs needless to select, from a
program table generally used so far. Because of this,
under the condition that the number of channels is about
to become 100 or more as recent satellite broadcasting, if
20   the program table as above is made, the two dimensionally
displayed program table itself occupies an extremely large
area and the audience cannot look everywhere when
searching a program or has need of a huge time for
searching the program. Furthermore, if the whole program
25   table is displayed as the program table itself though a

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program in a specific time zone is to be searched, there
is the defect that it is hard to search the aimed program
because program columns of other time zones catch his eye.

5   SUMMARY OF THE INVENTION

The present invention is made in view of such a
prior art problem and its object is to provide a system
for processing program information in which the display
structure of a program table can freely be changed in
10   accordance with a requirement or a taste of an audience.

For attaining the above object, the present
invention has the gist that a system for processing
program information has a construction comprising program
information storage means for storing program information,
15   and program table display means for two-dimensionally
displaying a program table following two axes in
accordance with two attributes among attributes given to
each piece of program information, and the program table
two-dimensionally displaying programs by using the
20   attributes at will as two axes, is made.

For the purpose that an audience can determine
the two-axes attributes at will, the system further
comprises attribute input means through which the two-axes
attributes used for two-dimensionally displaying the
25   program table are input, and program table making means

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for retrieving program information in program information

stored in the program information storage means on the

basis of said input attributes to make the program table,

and the program table display means can display the

5   program table from the program table making means. By

this manner, the program table making means retrieves

program information stored in the program information

storage means and can also have the function of

classifying the above program information.

10   By this construction, although a conventional

program table has merely the table structure in which time

slots are arranged along the vertical axis and various

channels are arranged along the horizontal axis, the

program table having a free structure without being fixed

15   to that can be displayed and the freeness of grasping and

selecting a program for the audience increases.

The invention set forth in claim 1 is that a

system for processing program information comprises

program information storage means for storing program

20   information, and program table display means for two-

dimensionally displaying a program table following two

axes in accordance with two attributes among attributes

given to each piece of program information, and has the

operation that the program table in accordance with a

25   taste or a requirement of a user by arbitrarily

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establishing the two-axes attributes, is displayed and a

program retrieval can easily and rapidly be carried out.

The invention set forth in claim 2 is that a

system for processing program information according to

5   claim 1, further comprises attribute input means through

which the two-axes attributes used for two-dimensionally

displaying the program table are input, and program table

making means for retrieving program information in program

information stored in the program information storage

10   means on the basis of said input attributes to make the

program table, and has the operation that the user can

select and determine the program table having a formation

suiting his taste by inputting the two-axes attributes

through the attribute input means and the program table

15   display means display the program table from the program

table making means.

The invention set forth in claim 3 is that, in a

system for processing program information according to

claim 2, the program table making means has the functions

20   of retrieving program information stored in the program

information storage means and classifying said program

information.

The invention set forth in claim 4 is that, in a

system for processing program information according to

25   claim 2, another attribute is selected in addition to the

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two-axes attributes of the program table to change over the display.

The invention set forth in claim 5 is that, in a system for processing program information according to

5   claim 2, the display is performed at the condition of culling a portion needless to be displayed when displaying the program table.

The invention set forth in claim 6 is that, in a system for processing program information according to

10 claim 5, the original program table is restored when displaying the program table.

The invention set forth in claim 7 is that, in a system for processing program information according to claim 2, an attribute relative to the program is selected

15 to change over the display.

The invention set forth in claim 8 is that, in a system for processing program information according to claim 2, a new attribute can be added to and an attribute can be deleted from the program table in accordance with a

20 selection of the attribute by a user or an input from another system.

The invention set forth in claim 9 is that, in a system for processing program information according to claim 2, information registered by a user is designated as

25 an attribute of the program table.

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The invention set forth in claim 10 is that, in a system for processing program information according to claim 2, when there are plural programs in a same time zone, they are displayed one upon another as they are

5   shifted rearward little by little, and displayed at the front one by one, and has the operation that they can be used for a program check of the same time zone without expanding the display area.

The invention set forth in claim 11 is that, in a

10 system for processing program information according to claim 2, three-axes attributes of the program table are selected by a user to display information as a three-dimensional shape.

The invention set forth in claim 12 is that, in a

15 system for processing program information according to claim 2, the attributive structure of a word relative to an attribute of the program table can be extracted from program information.

The invention set forth in claim 13 is that, in a

20 system for processing program information according to claim 2, an outline so far, pictures or sounds of a program can be stored to display and play back them.

The invention set forth in claim 14 is that, in a system for processing program information according to

25 claim 2, when a channel or a program is selected as an

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attribute of the program table, it is possible that the channel is changed over to the picture of the program and program relation information is displayed if the program is on the air at present, and only information relative to

5 the program is displayed if the program is off the air.

The invention set forth in claim 15 is that, in a system for processing program information according to claim 2, a channel is selected as an attribute of the program table, advertisements and program relation

10 information are displayed in accordance with the time schedule of programs in the channel.

The invention set forth in claim 16 is that, in a system for processing program information according to claim 2, program information, program relation information,

15 program information renewal information, information registered by a user, a program, a picture, or a sound is transmitted and received.

The invention set forth in claim 17 is that, in a system for processing program information according to

20 claim 2, an image sequence made by a user is transmitted and received to be displayed in a portion of the program table.

The invention set forth in claim 18 is that, in a system for processing program information according to

25 claim 2, program information selected by a user is

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transmitted and the number of people viewing the same

program is calculated to display the result in a portion

of the program table as an audience rating or the number

of audience.

5   The invention set forth in claim 19 is a system

for processing program information, wherein program

information including an index for retrieving a program

can be transmitted and received.

        The invention set forth in claim 20 is that, in a

10   system for processing program information according to

claim 19, a user attribute is maintained at the receiver

side to retrieve program information including an index

for retrieving a program, on the basis of the user

attribute.

15   The invention set forth in claim 21 is that, in a

system for processing program information according to

claim 19, when a retrieval was unsuccessful with program

information including an index for retrieving a program,

at the receiver side, a retrieval and an automatic

20   classification are carried out at the transmitter side and

the result is transmitted to the receiver side.

        The invention set forth in claim 22 is that, in a

system for processing program information according to

claim 20, when a retrieval according to the user attribute

25   was unsuccessful with program information including an

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index for retrieving a program, at the receiver side, a
retrieval and an automatic classification according to the
user attribute are carried out at the transmitter side and
the result is transmitted to the receiver side.

5   The invention set forth in claim 23 is that, in a
system for processing program information according to
claim 2, a designated program can be recorded, reserved
for recording or played back in accordance with a
designation of a user or an input from another system.

10   The invention set forth in claim 24 is that, in a
system for processing program information according to
claim 2, programs recorded or reserved for recording are
displayed along the time of the program table.

          The invention set forth in claim 25 is that, in a
15   system for processing program information according to
claim 2, a recorder is provided for recording information
of the program viewed by a user, and has the operation
that a relationship with recorded program information is
examined in all programs and the program is displayed when
20   it is judged that the relationship is high.

          The invention set forth in claim 26 is that, in a
system for processing program information according to
claim 2, it is shown whether a performer of the program
appears at a certain time of a certain day or not.

25   The invention set forth in claim 27 is that, in a

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system for processing program information according to

claim 2, the system includes fitting degree calculation

means for calculating a fitting degree between program

information and each piece of program classification

5   information, and program classification means in which, to

one given piece of program classification information and

a program information set, a fitting degree of each piece

of program information in the program information set to

program classification information, is calculated by using

10 the fitting degree calculation means to obtain a subset of

the program information set having a fitting degree not

less than a given threshold value, and has the operation

that a line of the program classification predetermined or

designated by a user is taken as one or more attributes of

15 the program table to display it by the program table

display means.

The invention set forth in claim 28 is that, in a

system for processing program information according to

claim 2, the system includes fitting degree calculation

20 means for calculating a fitting degree between program

information and each piece of program classification

information, and program classification means in which, as

to one given piece of program classification information

and a program information set, a fitting degree of each

25 piece of program information in the program information

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set to program classification information, is calculated

by using the fitting degree calculation means to obtain a

subset of the program information set having a fitting

degree not less than a given threshold value, and has the

5   operation that the program table display means displays

only a program classified into a program classification

predetermined or designated by a user so that it can be

distinguished from another program in the program table

without depending on the form of the program table.

10   The invention set forth in claim 29 is that, in a

system for processing program information according to

claim 2, the system includes program information

designation means for designating a subset as to a program

information set stored in the program information storage

15   means, relative key word extraction means for extracting a

characteristic word set characterizing the subset from the

subset of program information designated by the program

information designation means, and program information

extraction means for extracting characteristic word

20   information from the designated subset by using the

relative key word extraction means and extracting program

classification information for discriminating and

classifying program information similar to program

information in the subset, and has the operation that a

25   user can designate a proper program group and easily user-

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define new program classification information, and the

trouble of designating a characteristic word can be

omitted and a program can be classified more accurately

because the characteristic word is extracted from actual

5   program information.

The invention set forth in claim 30 is that, in a

system for processing program information according to any

of claims 27 to 29, program classification information is

transmitted from a user side terminal to a server side

10   terminal, program information is classified by the program

information classification means at the server side, and

only program information classified into program

classification information transmitted from the user side

terminal is transmitted to the user side terminal, and has

15   the operation that, by transmitting only program

information classified into program classification

information transmitted from the user side terminal in a

remote place, to the user side terminal to display it on

the program display means of the user side terminal, the

20   data quantity to be transmitted can remarkably be reduced

in comparison to the case of transmitting all program

table.

BRIEF DESCRIPTION OF THE DRAWINGS

25   These and other objects and features will become

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more readily apparent from the following detailed

description taken in conjunction with the accompanying

drawings in which:

Fig. 1 is a block diagram showing the

5   construction of the first embodiment of a system for

processing program information according to the present

invention;

Fig. 2 is a data structure diagram extracting and

showing an example of program information stored in the

10   program information storage means;

Fig. 3A is a diagram showing the construction of

the program table in the ordinary form having two axes of

"channel" and "time" used in the above first embodiment;

Fig. 3B is a program table by day of week in

15   relation to only the prime time used in the above first

embodiment;

Figs. 4A and 4B are diagrams illustrating a change example

of the display operation of the program table in the

system for processing program information according to the

20   above first embodiment;

Fig. 5A is a diagram showing the construction of

the program table in the ordinary form used in the above

first embodiment;

Fig. 5B is diagram showing the program table in a

25   change form having two axes of "type" and "time" used in

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the above first embodiment;

Fig. 5C is a diagram showing the program table in a change form having two axes of "type" and "audience rating" used in the above first embodiment;

5   Fig. 6A is a program table in a change form having two axes of "type" and "performer" used in the above first embodiment;

Fig. 6B is a program table in a change form having two axes of "performer" and "relative information"

10   used in the above first embodiment;

Fig. 7 is a diagram showing by a table proper or improper combinations of attributes as two axes;

Fig. 8 is a block diagram showing the construction of the second embodiment of a system for

15   processing program information according to the present invention;

Fig. 9A is a diagram showing the construction of the program table in the ordinary form having two axes of "channel" and "time" used in the above second embodiment;

20   Fig. 9B is a diagram showing the construction of the program table displaying separately by color the corresponding program obtained by selecting and designating the corresponding attribute in the above second embodiment;

25   Fig. 9C is a diagram showing the construction of

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the omitting-over program table obtained by culling the

parts needless to display as to the program table shown in

Fig. 9B;

Fig. 10 is a block diagram showing the

5   construction of the third embodiment of a system for

processing program information according to the present

invention;

Fig. 11A is a diagram showing the same program

table as the omitting-over program table in the above

10 second embodiment;

Fig. 11B is a diagram showing the program table

displaying the corresponding program separately by color

after restoring the above omitting-over program table to

the original program table;

15 Fig. 12 is a block diagram showing the

construction of the fourth embodiment of a system for

processing program information according to the present

invention;

Fig. 13A is a diagram showing the construction of

20 the program table in the ordinary form used in the above

fourth embodiment;

Fig. 13B is a diagram showing the program table

in a change form having two axes of "performer" and

"relative information" used in the above fourth

25 embodiment;

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Fig. 14 is a block diagram showing the construction of the fifth embodiment of a system for processing program information according to the present invention;

5 Fig. 15A is a diagram showing the construction of the program table in the ordinary form used in the above fifth embodiment;

Fig. 15B is a diagram showing the construction of the program table displaying separately by color the

10 corresponding program obtained by selecting a sub-type;

Fig. 16 is a block diagram showing the construction of the sixth embodiment of a system for processing program information according to the present invention;

15 Fig. 17A is a diagram showing the construction of the program table in the ordinary form used in the above sixth embodiment;

Fig. 17B is a diagram showing the construction of the program table displaying the user classification items

20 along the vertical axis and the program titles along the horizontal axis used in the above sixth embodiment;

Fig. 18 is a block diagram showing the construction of the seventh embodiment of a system for processing program information according to the present

25 invention;

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Fig. 19 is a diagram showing the construction of the same time zone program table displaying the time slots along the vertical axis and the user classification items along the horizontal axis used in the above seventh

5   embodiment;

Fig. 20 is a block diagram showing the construction of the eighth embodiment of a system for processing program information according to the present invention;

10   Fig. 21A is a A diagram showing the construction of the program table in which the time slots only of the prime time are arranged along the vertical axis and the days of week are arranged along the horizontal axis, used in the above eighth embodiment;

15   Fig. 21B is a diagram showing the construction of the program table three-dimensionally displaying the audience rating corresponding to the program by designating the audience rating in the program table of the above Fig. 21A;

20   Fig. 22 is a block diagram showing the construction of the ninth embodiment of a system for processing program information according to the present invention;

Fig. 23 is a block diagram showing the

25   construction of the tenth embodiment of a system for

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processing program information according to the present

invention;

Fig. 24A is a diagram showing the construction of

the program table in the ordinary form used in the above

5   tenth embodiment;

Fig. 24B is a diagram showing the construction of

the picture displaying program information of the

corresponding program by performing the program

designation in the program table of the above Fig. 24A;

10   Fig. 24C is a diagram showing the construction of

the picture displaying the display item of the

corresponding program by performing the item designation

in the picture of the above Fig. 24B;

Fig. 25 is a block diagram showing the

15   construction of the eleventh embodiment of a system for

processing program information according to the present

invention;

Fig. 26A is a diagram showing the construction of

the program table in the ordinary form used in the above

20   eleventh embodiment;

Fig. 26B is a diagram showing the construction of

the picture displaying program information of the

corresponding program on the air at present by performing

the channel designation in the program table of the above

25   Fig. 25A;

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Fig. 26C is a diagram showing the construction of

the other picture displaying an image of the program in

parallel with the picture display of the above (b);

Fig. 27 is a block diagram showing the

5   construction of the twelfth embodiment of a system for

processing program information according to the present

invention;

Fig. 28A is a diagram showing the construction of

the program table in the ordinary form used in the above

10   twelfth embodiment;

Fig. 28B is a diagram showing the construction of

the picture displaying program information of the

corresponding program on the air at present by performing

the channel designation in the program table of the above

15   Fig. 28A;

Fig. 28C is a diagram showing the construction of

the picture displaying program information of another

corresponding program on the air at present by performing

the channel designation at another time in the program

20   table of the above Fig. 28A;

Fig. 29 is a block diagram showing the

construction of the thirteenth embodiment of a system for

processing program information according to the present

invention;

25   Fig. 30A is a diagram showing the construction of

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the program table in the ordinary form used in the above

thirteenth embodiment;

Fig. 30B is a diagram showing the construction of

the image picture obtained by designating the program that

5   had already been on the air, in the program table of the

above Fig. 30A;

Fig. 31 is a block diagram showing the

construction of the fourteenth embodiment of a system for

processing program information according to the present

10   invention;

Fig. 32A is a diagram showing the construction of

the program table in the ordinary form used in the above

fourteenth embodiment;

Fig. 32B is a diagram showing the construction of

15   the image sequence image picture obtained by selecting the

user channel in the program table of the above Fig. 32A;

Fig. 33 is a block diagram showing the

construction of the fifteenth embodiment of a system for

processing program information according to the present

20   invention;

Fig. 34 is a block diagram showing the

construction of the sixteenth embodiment of a system for

processing program information according to the present

invention;

25   Fig. 35 is a block diagram showing the

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construction of the seventeenth embodiment of a system for

processing program information according to the present

invention;

Fig. 36 is a block diagram showing the

5　construction of the eighteenth embodiment of a system for

processing program information according to the present

invention;

Fig. 37 is a block diagram showing the

construction of the nineteenth embodiment of a system for

10　processing program information according to the present

invention;

Fig. 38 is a block diagram showing the

construction of the twentieth embodiment of a system for

processing program information according to the present

15　invention;

Fig. 39A is a diagram showing the construction of

the program table in the ordinary form used in the above

twentieth embodiment;

Fig. 39B is a diagram showing the construction of

20　the image picture with the recording, play back and

reservation buttons obtained by the predetermined program

selection in the program table of the above Fig. 39A;

Fig. 40A is a diagram showing the construction of

the picture when performing the recording reservation

25　operation in the image picture of Fig. 39B;

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Fig. 40B is a diagram showing the construction of the program table clearly displaying the time zone in which the recording or recording reservation was performed in the picture of the above Fig. 40A;

5   Fig. 41 is a block diagram showing the construction of the twenty-first embodiment of a system for processing program information according to the present invention;

Fig. 42A is a diagram showing the construction of

10   the program table in the ordinary form used in the above twenty-first embodiment;

Fig. 42B is a diagram showing the construction of the program table in which the program corresponding to the program having ever been viewed is different in color

15   from the other programs, obtained by the button operation in the picture of the above Fig. 42A;

Fig. 43 is a diagram showing the user classification program table when designating the user classification operation in the program table shown in Fig.

20   42A;

Fig. 44 is a block diagram showing the construction of the twenty-second embodiment of a system for processing program information according to the present invention;

25   Fig; 45 is an image diagram showing the process

25

operation content of the classification method by the

adaptation degree calculation means in the above twenty-

second embodiment;

Fig. 46 is an image diagram of the classification

5   result of program information by the program information

classification means;

Fig. 47 is a block diagram showing the

construction of the twenty-third embodiment of a system

for processing program information according to the

10   present invention; and

Fig. 48 is a block diagram showing the

construction of the twenty-fourth embodiment of a system

for processing program information according to the

present invention.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, embodiments of the present invention

will be described in detail with reference to accompanying

drawings.

20   First Embodiment

Fig. 1 is a block diagram showing the

construction of the first embodiment of a system for

processing program information according to the present

invention. In Fig. 1, the reference 1 denotes program

25   information storage means for storing received program

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information, 2 does attribute input means through which

attribute information to be used as two-axes attributes of

a program table and the others of attribute information

are input, 3 does program information

5   retrieval/classification means as program making means for

retrieving or classifying a program in program information

on the basis of input attribute information to make the

program table, and 4 does program table display means for

displaying the made program table.

10   Here, in attribute information to be used as the

two-axes attributes, although it goes without saying that

time slots (hereinafter, merely called time) and channels

conventionally used are included, not limited to those

attributes, there are various attributes, for instance,

15   attributes such as days of week and prime times in

relation to time, and category (type) attributes such as

news, weather reports, dramas, sports (may be by event),

song programs, cooking programs and education programs in

relation to the type of program, furthermore, attributes

20   in relation to sponsors, attributes in relation to

performers or producers, information relative to programs

(such as home pages, books and CDs), program forms (such

as live, rebroadcast, bilingual, teletext, digest, high-

definition broadcasting, wide-vision broadcasting and

25   stereophonic broadcasting), an audience rating,

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broadcasting areas, commentaries, G-codes, and so on.

Fig. 2 is a data structure diagram showing an extracted instance of program information stored in the program information storage means 1. As shown in this

5   drawing, program information is displayed as a directory in the form of a table 150. A detailed content of each piece of program information is separately housed. The names of TV stations providing programs are described in station name columns 151 of this table 150 and the dates

10   and times and the days of the week when those programs are broadcast are described in date columns 152 and day-of-week columns 153, respectively. The broadcasting start times and the broadcasting end times of those programs are described in broadcasting start time columns 154 and

15   broadcasting end time columns 155. The titles of storage means programs are described in program title columns 156. The contents of the storage means programs are described in outline in program content columns 157. Furthermore, in program classification columns 158, the types which the

20   programs belong to are described with corresponding numerical values and the names of the types (0: others, 2: sports, or the like).

As the detailed content of program information, data as follows is housed. This is an example using

25   program information of the pro baseball broadcast from

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nineteen to twenty fifty-four of May 31, 1997, on the

fourth line in Fig. 2. The detailed content of this piece

of program information has a data structure such as

"975310000000186, 01, E8004, Nihon Television,

5   19970531,199780531, 1, Saturday,

19:00, 20:54, pro baseball, Koshien Stadium, Hanshin vs

Kyojin, commentator: Koji Yamamoto, Kozo Kawato,

announcer: Bin Ogi,(maximum extension to 9:24, move back

programs after), Hanshin lack of force of the batting

10   because of throwing out Greenwel. But the sense of

stability of the starting pitching staff of Yabu, Kawajiri,

et al., has increased. If the first run is scored by

surely seizing a few chances and then the attack of Kyojin

is stopped by the defensive force including pitcher ...,

15   (called off) Super Special 97 "song battle of famous songs

of Showa vs. hit songs of Heisei",

471832, 010000000000000000000000000, 2, sports,"

As for the other programs, the detailed contents are

almost the same and have the contents briefly reporting

20   the contents of the respective programs.

As for the system for processing program

information constructed as above, the operation will be

described hereinafter. Figs. 3A and 3B are diagrams for

illustrating display operations of the program table in

25   the system for processing program information according to

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the above first embodiment. In this first embodiment,

when displaying the program table 101, as shown in Fig. 3A,

at first, as a base display operation, the program table

101 in which time slots are arranged along the vertical

5   axis 102 and various channels are arranged along the

horizontal axis 103 is two-dimensionally displayed on the

program table display means 4. On the positions adjacent

to the axes of the program table 101 in the display

picture, there are provided display columns for the two-

10 axes attributes determining the construction of the

program table displayed at present, that is, present

attribute display columns 104 and 105, and display columns

for other two-axes attributes for changing the

construction of the program table, that is, change

15 attribute display columns 106 and 107. In the instance of

Fig. 3A, "time" is displayed in the present attribute

display column 104 and "CH" representing channel is

displayed in the present attribute display column 105.

"prime time" as another piece of attribute information

20 capable of constituting the two-axes attributes is

displayed in the change attribute display column 106, and

" day of week" as another piece of attribute information

likewise capable of constituting the two-axes attributes

is displayed in the change attribute display column 107.

25 The above-described attribute display columns 104, 105,

30

106 and 107, or various display columns described later

each has the function as a operation button that, when the

display column is clicked by data input means (a mouse or

the like), the operation displayed therein is performed or

5   the picture is changed to show the matter displayed

therein.

If an audience designates the respective

attributes "prime time" and " day of week" from the change

attribute display columns 106 and 107, those attributes

10   are considered input through the attribute input means and

the program information retrieval/classification means 3

makes a program table using the respective attributes as

the two-axes attributes and the program table by day of

week relative to only the prime time (eight o'clock to ten

15   o'clock), that is, the program table 108 in which the time

slots only of the prime time (eight o'clock to ten

o'clock) are arranged along the vertical axis 102 and the

days of week (Monday, Tuesday, Wednesday, ...) are

arranged along the horizontal axis 103, is displayed on

20   the program table display means 4. In Figs. 3A and 3B,

squares other than the axes 102 and 103 are program

information display columns 109, in which respective

corresponding pieces of program information are displayed

or stored as data in a memory of the program table display

25   means at the conditions of being able to display.

31

Here, the operation of the program information

retrieval/classification means 3 used in the present

invention will be described. The program information

retrieval/classification means 3 has either or both of the

5   functions of retrieval and classification in addition to

the function of making a program table. Here, the

retrieval function will be described first (the

classification function will be described in the sixth

embodiment).

10   As the attributes input through the attribute

input means 2, there are various pieces of attribute

information, for instance, the time (the date, the day of

week, the prime time, the start time, and the end time),

the channel, the type (such as news, weather reports,

15   dramas, and sports), the subtype, the title, the sponsor,

the performer (the role, and the number of appearance),

the producer, program relation information (such as home

pages, books and CDs), program forms (such as live,

rebroadcast, bilingual, teletext, digest, high-definition

20   broadcasting, wide-vision broadcasting and stereophonic

broadcasting), an audience rating, broadcasting areas,

commentaries, G-codes, and so on. Not merely the

attributes but also attribute values can be considered.

In Figs. 3A and eB, the buttons such as "CH",

25   "time", "day of week" and "prime time", and each square of

32

the program table, that is, the program display column 109

correspond to the attribute input means 2 in Fig. 1. For

instance, if the buttons of " day of week" and "prime

time" are operated, from the attribute of "day of week",

5   the part of "Monday, Tuesday, Wednesday, Thursday, Friday,

Saturday, Sunday" is obtained from the data of

"day of week: Monday, Tuesday, Wednesday, Thursday, Friday,

Saturday, Sunday".

Furthermore, from the attribute of "prime time", the part

10   of "20, 21, 22" is obtained from the data of

"prime time: 20, 21, 22"

stored in attribute structure storage means. The

attribute structure storage means is memory means for

storing data relative to the attribute, the construction

15   and operation of which will be described in the

description of a later embodiment. Program information

satisfying those two attribute values is retrieved from

the program information storage means 1 of Fig. 1 through

the program information retrieval/classification means 3,

20   and the corresponding position of the program table is

determined to display it on the program table display

means 4. In Fig. 1, the attribute structure storage means

is in default.

As described above, in this embodiment, as a

25   manner of view other than the ordinary program table

33

comprising the two axes of existing channel and time, the

user can look the program table in the form that he likes

to look, by designating by himself the two attributes

(two-axes attributes) that he likes to look. Furthermore,

5   he can designate the attribute by the data constituted by

an attribute stored in the attribute structure storage

means and the attribute value. From that, in conventional

retrieving systems, there are many cases that the

retrieval result is shown as a list by a certain attribute,

10   for instance, an attribute such as ranking. In the case

of the display in relation to two attributes by this

manner, as the display, two lists or the display in

relation to the attributes on or after the second in each

item in the list is required. In contrast to this, by

15   including the retrieval result in this table form, because

at least the two attributes of the vertical and horizontal

axes can be used, in the case of the two attributes, the

display is possible by one table. As for attributes on

and after the third, the displays in relation to those

20   attributes can be inserted in the program display columns

109 in the table similarly to the list. As described

above, the merit as the table can be utilized for the

retrieval result, furthermore, the display can be proposed

to the user without changing the display image.

25   Figs. 4A and 4B are diagrams for illustrating

34

modified examples of display operations of the program

table in the system for processing program information

according to the above first embodiment. In this modified

operation of the first embodiments, at the position

5   adjacent to the right side of the program table 108 in the

display picture displaying the program table 108, there

are provided attribute display columns 110 and 111 for

further changing the construction of the program table.

In the example of Fig. 4A, "NEWS (news)", which is one of

10   the types of programs, is displayed in the attribute

display column 110, and "audience rating" representing an

item attribute wanted to investigate is displayed in the

other attribute display column 111.

If the audience designates the respective

15   attributes of "NEWS" and "audience rating" from the

attribute display columns 110 and 111, those attributes

are considered input through the attribute input means,

and the program information retrieval/classification means

3 makes a program investigation result table 112 along the

20   respective attributes to display the audience rating

investigation result table 112 of the news program by the

date of week in relation to only the prime time (eight

o'clock to ten o'clock), on the program table display

means 4. By this manner, changing over the display

25   becomes possible by selecting other attributes in addition

35

to the two-axes attributes of the program table 101 or 108.

In this case of Figs. 4, if buttons such as "audience

rating" and "NEWS", which are attributes other than the

buttons of the two-axes attributes of the program table

5   101 such as "CH", "time", "day of week" and "prime time",

are operated, program information corresponding to those

is retrieved from the program information storage means 1

shown in Fig. 1 through the program information

retrieval/classification means 3 to display it on the

10   program table display means 4.

By this manner, in relation to relative

attributes other than the attributes on the two axes of

the program table 101, they can be looked with relation to

the program table 108 or 112, and more various measures

15   for viewing the program table can be proposed to the user.

Furthermore, as another operation form, for

instance, in the condition that the ordinary program table

101 is displayed on the program table display means 4, if

the user inputs "type" and "time" through the attribute

20   input means 2, (because the time is not selected, it is

input by default), from program information of Fig. 2, the

fields of the type and the time of each piece of program

information are checked to select one in which the same

contents are described in both of them, and the program is

25   arranged in the columns of the corresponding type and the

36

corresponding time of the program table. As for the two-axes attributes, from program information of Fig. 2, different attributes relative to the input attributes are used. Also in the case of selecting other attributes, it is similar. In the case of selecting only one attribute

5   of the two-axes attributes, the old attribute is used for the attribute not selected. By the above operation, on the program table display means 4, from the ordinary program table 101 shown in Fig. 5A, a program table 159 in which "type" and "time" are used for the two axes as shown

10   in Fig. 5B, is displayed. As for the change operation of the display of the program table by a selection operation of the two-axes attributes, a little more description will be made. In the display condition of Fig. 5B, if the user

15   inputs "type" and "audience rating" through the attribute input means 2, a program table in which each attribute is used for the two axis is displayed as shown in Fig. 5C. Next, in the display condition of Fig. 5C, if the user inputs "type" and "performer" through the attribute input

20   means 2, performers are enumerated on the vertical axis 102 as shown in Fig. 6A and the type is shown on the horizontal axis 103 to display a program table in which each attribute is used for the two axes. Furthermore, in the display condition of Fig. 6C, if the user inputs

25   "performer" and "relative information" through the

37

attribute input means 2, the performers are enumerated on the vertical axis 102 as shown in Fig. 6B and information such as CDs, books and home pages is shown on the horizontal axis 103 as relative information to display a

5   program table in which each attribute is used for the two axes. As this manner, by optionally inputting the two-axes attributes, the form or the construction of the program table can be changed one after another.

As described above, in this embodiment, as a

10   manner of view other than the ordinary program table comprising the two axes of existing channel and time, the user can look the program table as changing the form of the program table one after another, by designating by himself the two attributes (two-axes attributes) that he

15   likes to look. For instance, in the above operation, if "type" and "time" are selected as the two-axes attributes, it becomes easy to find the weather report at the time nearest from now. If "type" and "audience rating" are selected, it is possible to select and view only highly

20   popular ones among dramas. If "type" and "performer" are selected, it can be known that which performer often appears in which type. Furthermore, if "performer" and "relative information" are selected, it can be known that which performer does what activity.

25   Upon the input operation of the two-axes

38

attributes for changing the form of the program table, any

attributes cannot freely be input but there are

combinations of attributes improper for the two-axes

attributes.   Fig. 7 is a diagram for showing combinations

5   of attributes proper or improper for the two-axes

attributes by a table.   In this drawing, the combinations

of attributes marked by ○ are considered proper for the

two-axes attributes and the combinations of attributes

marked by X are considered improper for the two-axes

10   attributes.   The combinations of attributes marked by △

cannot be judged whether they are proper or improper for

the two-axes attributes.   For instance, if "time" and

"channel" are selected as two attributes, an ordinary

program table can be made.   It is a combination of

15   attributes proper for two axes.   As effective combinations

other than this, there are the other combinations marked

by ○ and effective manners of viewing the program table

can be proposed by increasing variations for showing

program information to the user.

20   In the conventional program information retrieval

system, there are many cases that the retrieval result is

shown as a list by a certain attribute, for instance, an

attribute such as ranking.   In the case of the display in

relation to two attributes by this manner, as the display,

25   two lists or the display in relation to the attributes on

39

or after the second in each item in the list is required.

Because that second attribute display is displayed in the

form of depending on the first attribute, it cannot be

considered an even display as to the attributes. That is,

5   in contrast to laying emphasis on the first attribute, by

including the retrieval result in this table form, because

at least the two attributes of the vertical and horizontal

axes can be used, because of an even display, in the case

of the two attributes, the display is possible by one

10   table and the manner of view from the user does not

incline to one attribute. Furthermore, as for attributes

on and after the third, the displays in relation to those

attributes can be inserted in squares (correspond to the

reference 109) in the table similarly to the list. As

15   described above, the merit as the table can be utilized

for the retrieval result, furthermore, the display can be

proposed to the user without changing the display image.

2nd Embodiment

Fig. 8 is a block diagram showing the

20   construction of the second embodiment of a system for

processing program information according to the present

invention. In Fig. 8, the reference 5 denotes program

table omission means for culling information needless to

display in a program table. The program table omission

25   means 5 is connected between program information

40

retrieval/classification means 3 and program table display

means to receive data from the program information

retrieval/classification means 3 and send the processing

result to the program table display means 4. In this

5   second embodiment, the other construction of the system

for processing program information is the same as the

above first embodiment and includes program information

storage means 1, attribute input means 2, the program

information retrieval/classification means 3, and the

10   program table display means 4.

The operation of the system for processing

program information according to the second embodiment

having this construction will be described. Figs. 9 are

diagrams for illustrating the display operation of the

15   program table in the system for processing program

information according to the second embodiment. In this

second embodiment, as shown in Fig. 9A, at first, a basic

program table 101 is two-dimensionally displayed on the

program table display means 4. At the position (the upper

20   position of the program table) adjacent to the program

table 101 in the display picture, there is provided a

retrieval attribute display column 113 for retrieving a

program. In this retrieval attribute display column 113,

"baseball" in relation to the type is displayed as the

25   attribute wanted to retrieve a program.

41

If the user selects and designate the
corresponding attribute "baseball" from the retrieval
attribute display column 113, this attribute is considered
input through the attribute input means 2 and the program
5   information retrieval/classification means 3 retrieves the
program corresponding to the attribute as shown in Fig. 9B
to make a program table 114 in which, for instance, the
corresponding programs are displayed separately by color
(in this case, from the baseball through the program
10   information retrieval/classification means 3, a program
relative to the baseball is retrieved from the program
information storage means 1 and the program is colored.
This program table 114 is sent to the program table
omission means 5. The program table omission means 5
15   culls the part needless to display in the program table
114, that is, programs other than the retrieved program
relative to "baseball" and makes an omitting-over program
table 115 as shown in Fig. 9C to send it to the program
table display means 4. In this case, the program table
20   omission means 5 culls the other non-relative part from
the program table to remain only the part of the time and
channel including the colored program (in general, the
program table is colored and all of them are displayed but
the two axes not colored are found by the program table
25   omission means not to display the part). By this manner,

42

the above omitting-over program table 115 is displayed on

the program table display means 4. By this manner, the

audience can look the program table in which only the

program he likes to know is displayed in a condensed

5   manner from the enormous amount of program information.

Particularly in the case of the program table display

means 4 having a small display area for the program table,

only a part can be displayed by scrolling or the like. By

the method of this embodiment, the non-relative parts are

10 omitted as much as possible and viewing in a small display

area becomes possible.

3rd Embodiment

Fig. 10 is a block diagram showing the

construction of the third embodiment of a system for

15 processing program information according to the present

invention. In Fig. 10, the reference 6 denotes attribute

storage means for storing attribute information input

through attribute input means 2, and 7 does restoration

input means for inputting a restoration instruction for

20 culled program information. In this third embodiment, the

other construction of the system for processing program

information is the same as the above second embodiment and

includes program information storage means 1, the

attribute input means 2, program information

25 retrieval/classification means 3, program table display

43

means 4, and program table omission means 5. The
attribute storage means 6 is connected to receive data
from the attribute input means 2 and send stored data to
the restoration input means 7. The restoration input

5   means 7 is connected to receive data from the attribute
storage means 6 and send the restoration input data to the
program information retrieval/classification means 3 and
the program table omission means 5.

The operation of the system for processing

10 program information according to the third embodiment
having this construction will be described. Figs. 11 are
diagrams for illustrating the display operation of the
program table in the system for processing program
information according to the third embodiment. In this

15 third embodiment, the program table shown in Fig. 11A is
the same as the omitting-over program table 115 in the
above second embodiment. At the position (the upper
position of the program table) adjacent to the omitting-
over program table 115 in this display picture, there is

20 provided a restoration instruction column 116 abreast with
a retrieval attribute display column 113 for retrieving a
program.

After displaying the above omitting-over program
table 115, if the audience instructs a restoration from

25 the restoration instruction column 116, this command data

44

are considered instructed and input through the

restoration input means 7 and the restoration input means

7 reads out a restoration attribute from the attribute

storage means 6 to send it to the program information

5   retrieval/classification means 3 and gives an operation

instruction to this program information

retrieval/classification means 3. By this manner, as

shown in Fig. 11B, the program information

retrieval/classification means 3 retrievals a program

10   corresponding to the previously instructed retrieval

attribute to make a program table 114 in which the

corresponding program is displayed separately by color.

The program table omission means 5 is stopped operating

for processing by an instruction signal from the

15   restoration input means 7. Although this program table

114 is sent to the program table omission means 5, because

the program table omission means 5 is at the condition of

stopping the operation, the program table 114 is sent as

it is to the program table display means 4 to display it.

20   By this manner, the audience can look the program table

114 restored as shown in Fig. 11B. It is effective if he

likes to look the omitted part in the program table having

been once omitted.

For instance, as a concrete operation successive

25   from the second embodiment to the third embodiment, if

45

"baseball" is selected in the program table 101 in Fig. 9A,

the programs relative to the baseball are colored in the

program table 114 (Fig. 9B). This processing operation is

performed by retrieving the programs relative to the

5   baseball from the program information storage means 1 from

the baseball through the program information

retrieval/classification means 3 to color the programs.

Only the parts of the times and channels including the

colored programs are left and next, the other parts having

10   no relation are culled from the program table to obtain

the program table 115 as shown in Fig. 9C. This

processing finds two axes not being colored by the program

table omission means 5 from the program table (yet the

ordinary program table at this time) displayed by merely

15   partially being colored not to display the part. After

this, if the button 116 of "to original" is operated in

Fig. 11A, the restored program table 114 as shown in Fig.

11B is displayed.

4th Embodiment

20   Fig. 12 is a block diagram showing the

construction of the fourth embodiment of a system for

processing program information according to the present

invention. In Fig. 12, the reference 8 denotes program

relation information storage means for storing information

25   relative to the program, and 9 does program relation

46

information retrieval/classification means for retrieving

and classifying program relation information. In this

fourth embodiment, the other construction of the system

for processing program information is the same as the

5   above first embodiment and includes program information

storage means 1, attribute input means 2, program

information retrieval/classification means 3, and program

table display means 4. The program relation information

storage means 8 stores information relative to respective

10   program information sentences, for instance, performers,

the producer, the sponsor, the explanation home page

address of the program, CDs, books, and so on. This

program relation information storage means 8 is connected

to the program relation information

15   retrieval/classification means 9 to send data stored

therein to the program relation information

retrieval/classification means 9. The program relation

information retrieval/classification means is connected to

retrieve and classify the above program relation

20   information and send the retrieval/classification result

to the program information retrieval/classification means

3.

The operation of the system for processing

program information according to the fourth embodiment

25   having this construction will be described. Figs. 13 are

47

diagrams for illustrating the display operation of the

program table in the system for processing program

information according to the fourth embodiment. In this

fourth embodiment, at first, the basic program table 101

5   is two-dimensionally displayed on the program table

display means 4 as shown in Fig. 13A. At the positions

adjacent to the program table 101 in the display picture,

there are provided display columns for the two-axes

attributes determining the construction of the program

10   table displayed at present, that is, present attribute

display columns 104 and 105 and a display column for other

two-axes attributes for changing the construction of the

program table, that is, a change attribute display column

107. Another attribute display column 111 for changing

15   the construction of the program table is provided. In the

example of Fig. 13A, "time" is displayed in the present

attribute display column 104 and "CH" representing the

channel is displayed in the present attribute display

column 105. In the change attribute display column 107,

20   "day of week" as another piece of attribute information

capable of being the two-axes attributes is displayed. In

the other attribute display column 111, an operation

button display of "audience rating" showing the item

attribute wanted to investigate is performed. Furthermore,

25   at the position adjacent to the program table 101 in this

48

display picture, there are provided a relative information

display column 117 and a performer display column 118 for

displaying or designating a performer corresponding to one

item of the relative information.

5   If the audience inputs the attributes of

"performer" and "relative information" through the

attribute input means 2 to select "performer" for the

attribute of the vertical axis of the program table 101

and "relative information" for the attribute of the

10   horizontal axis, the program information

retrieval/classification means 3 makes a demand for data

to the program relation information

retrieval/classification means 9. With this, the program

relation information retrieval/classification means 9

15   makes a demand for data to the program relation

information storage means 8 to receive a delivery of data.

The program relation information retrieval/classification

means 9 retrieves and classifies relative information in

program relation information to send it to the program

20   information retrieval/classification means 3. By this

manner, a relation program table 119 in which sets of

performers (Yukiko Sakurai, Takuya Kimura, Arisa

Mizuki, ... are listed up on the vertical axis 102) and

relative information (CD, book and home page are listed up

25   on the horizontal axis 103) are two-dimensionally

49

displayed in the form of a table as shown in Fig. 13B, is

made. This relation program table 119 is sent to the

program table display means 4 to be displayed. By this

manner, the audience can look information relative to the

5 program as shown in Fig. 13B and the user can obtain not

merely information directly relative to the program but

information indirectly relative to it. There are the case

that the program relation information

retrieval/classification means 9 and the program relation

10 information storage means 8 are locally disposed and the

case that they are remotely disposed.

By this manner, not merely information directly

relative to the program but information indirectly

relative to it can be proposed to the user. For instance,

15 in the case of the program relation information storage

means 8 of a recording medium such as CD-ROM and DVD

(digital video disk), in accordance with the program

selection in the program table, it is possible that an

image or a sound from the recording medium is played or

20 information such as a text used in the program, a

dictionary and an encyclopedia is displayed. If the

program relation information storage means 8 is a home

page or the like on a network, a page relative to the

program can be retrieved by the program relation

25 information retrieval/classification means 9 to be

50

displayed. Although the selection of the attribute has

been described here, the case of adding a certain

attribute to another attribute can be considered. For

instance, it is such as a combination of the attribute of

5   audience rating and the attribute of type (drama) as shown

in the following two tables.

[Table 1]

		Attribute 1		
		Attribute value 11,	Attribute value 12,	Attribute value 13
Attributes 2 and 3	Attribute value 21 and Attribute 31			
	Attribute value 22 and Attribute 31			
	Attribute value 23 and Attribute 31			

10

[Table 2]

		Channel		
		NHK,	NHK Education,	Nihon Television
Audience rating and Dramas	Dramas not less than 30%			
	Dramas not less than 20%			
	Dramas not less than 10%			

5th Embodiment

51

Fig. 14 is a block diagram showing the

construction of the fifth embodiment of a system for

processing program information according to the present

invention.   In Fig. 14, the reference 10 denotes attribute

5   input means display means for displaying information input

to attribute input means, and 11 does attribute structure

storage means for storing data relative to the structure

of the attribute input through the attribute input means.

In this fourth embodiment, the other construction of the

10   system for processing program information is the same as

the above first embodiment and includes program

information storage means 1, the attribute input means 2,

program information retrieval/classification means 3, and

program table display means 4.   The attribute input means

15   display means 10 is connected to the attribute input means

2 to display the input means data and connected to send

data to the attribute structure storage means 11.   The

attribute structure storage means 11 is connected to send

data to and receive data from the attribute input means

20   display means 10.

The operation of the system for processing

program information according to the fifth embodiment

having this construction will be described.   Figs. 15 are

diagrams for illustrating the display operation of the

25   program table in the system for processing program

52

information according to the fifth embodiment. In this

fifth embodiment, at first, the basic program table 101 is

two-dimensionally displayed on the program table display

means 4 as shown in Fig. 15A. At the position (the upper

5   position of the program table) adjacent to the program

table 101 in the display picture, there is provided a

retrieval attribute display column 113 for retrieving a

program. In this retrieval attribute display column 113,

"baseball" relative to the type is displayed as the

10   attribute wanted to retrieve a program.

If the audience selects and designates the

corresponding attribute "baseball" from the retrieval

attribute display column 113, "baseball" is considered

input through the attribute input means 2, and the

15   attribute input means display means 10 picks out the part

of "high-school baseball, pro baseball, major leagues"

corresponding to "baseball" from the data of "baseball:

high-school baseball, pro baseball, major leagues" stored

in the attribute structure storage means 11 to display

20   buttons (113a, 113b and 113c, respectively) of those

attributes. By this manner, the attributes relative to

the subtypes of so-called "baseball" are given as

candidates and the attributes relative to the subtypes are

displayed. If the audience further selects any (for

25   instance, the high-school baseball 113a) of the subtypes,

53

the program information retrieval/classification means 3

retrieves a program corresponding to the attribute as

shown in Fig. 15B and, for instance, makes a program table

101a in which the corresponding program is displayed

5   separately by color (in this case, from the high-school

baseball through the program information

retrieval/classification means 3, a program relative to

the high-school baseball is retrieved from the program

information storage means 1 to color the program). This

10 program table 101a is sent to the program table display

means 4 to be displayed thereon. By this manner, it

becomes possible to perform the program retrieval in the

more specialized type to make and display the program

table. It becomes possible to input not only in relation

15 to the statically fixed attribute but also in relation to

another relative attribute.

By this manner, although the subtype to the type

is proposed to the user as the attribute and it becomes

possible to focus the program, by displaying the attribute

20 relative to the program, for instance, performers,

rebroadcast, teletext, manager comment, time, channel,

title, and key words such as O-157, AIDS and earthquake as

the attribute value relative to the program, as the

attribute input 2 to be proposed to the user, a new manner

25 of viewing the program table to the user can be proposed

54

by combining those attributes.

6th Embodiment

Fig. 16 is a block diagram showing the

construction of the sixth embodiment of a system for

5   processing program information according to the present

invention. In Fig. 16, the reference 11 denotes attribute

structure storage means for storing data relative to the

structure of the attribute input through attribute input

means, and 12 dose attribute structure establishment means

10   for establishing the attribute structure. In this sixth

embodiment, the other structure of the system for

processing program information is the same as the above

first embodiment and includes program information storage

means 1, the attribute input means 2, program information

15   retrieval/classification means 3, and program table

display means 4. The attribute structure storage means 11

is connected to send data to and receive data from the

attribute input means 2. The attribute structure storage

means 11 is connected to the attribute input means 2 to

20   store the instruction data of the attribute input through

the attribute input means 2. The attribute structure

storage means 11 is also connected to the attribute

structure establishment means 12 to receive data from the

attribute structure establishment means 12 and store them.

25   The operation of the system for processing

55

program information according to the sixth embodiment

having this construction will be described. Fig. 17 is a

diagram for illustrating the display operation of the

program table in the system for processing program

5   information according to the sixth embodiment. Here, the

classification function of the program information

retrieval/classification means 3 will be described.

Through the attribute structure input means 12 in Fig. 16,

the attribute structure is input by the user. As the

10   attribute structure, for instance, there are "computer:

software, CG, personal computer, ..." and so on. This

means that, in the user definition type of "computer",

each key word of "software, CG, personal computer, ..."

appears. Then, the program information

15   retrieval/classification means 3 takes matching with

program information stored in the program information

storage means 1 by this attribute structure, for instance,

the letter line of data as shown in Fig. 2 and classifies

each program to add classification information to each

20   program, for instance, add classification information as

"computer" in the case of good matching with the key word

of "software, CG, personal computer, ..." or the like.

The above key word for the user classification of

"software, CG, personal computer, ...", that is, the

25   attribute structure is input through the attribute

56

structure establishment means 12 by designating "computer"

when the audience likes to look (or look for from the

program table) the program relative to the computer. This

attribute structure is stored in the attribute structure

5   storage means 11. The attribute structure not registered

by the audience himself can also be input through the

attribute structure establishment means 12. In the

example of the above computer, as other attribute

structures to be input, for instance, there are terms such

10   as application and protocol.

Under such a condition of program information

being classified, upon the display operation of the

program table in this sixth embodiment, at first, the

basic program table 101 is two-dimensionally displayed on

15   the program table display means 4 as shown in Fig. 17A.

At the position adjacent to the program table 101 in the

display picture, there are provided display columns for

the two-axes attributes determining the construction of

the program table displayed at present, that is, present

20   attribute display columns 104 and 105, and a display

column for other two-axes attributes for changing the

construction of the program table, that is, a change

attribute display column 107. There is also provided

another attribute display column 111 for changing the

25   construction of the program table. In the example of Fig.

57

17A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. In the change attribute display column 107,

5   "day of week" as another piece of attribute information capable of being the two-axes attributes is displayed. In the other attribute display column 111, an operation button 100 of "user classification" representing the attribute that the audience classifies and establishes

10 based on his taste, interest or requirement, is displayed.

If the audience selects and designates the corresponding attribute "user classification" from the attribute display column 111, "user classification" is considered input through the attribute input means 2 and,

15 for instance, the part of "software, CG, personal computer, ..." is obtained from "computer: software, CG, personal computer, ..." stored in the attribute structure storage means 11, and the input to the program information retrieval/classification means 3 is performed by using

20 those as the key word. The program information retrieval/classification means 3 performs the retrieval on the basis of the user attribute previously established to the program information storage means 1, and classifies information received from the program information storage

25 means 1 to make the user classification program table 120

58

as shown in Fig. 17B. In this user classification program

table 120, various kinds of user classification items such

as "computer", "diving", "my taste", ..., are displayed

along the vertical axis 102, and various kinds of program

5   titles are displayed along the horizontal axis 103 in the

predetermined order such as "1", "2", "3", ... The user

classification program table 120 is sent to the program

table display means 4 to be displayed. By this manner,

the audience can obtain the program table meeting the

10   classification based on his taste or the like, and easily

perform the program selection.

         As another operation, it is possible that the

program information retrieval/classification means 3

previously classifies program information stored in the

15   program information storage means 1 from "computer:

software, CG, personal computer" stored in the attribute

structure storage means 11 so that the classification item

is "computer" if the key word of "software, CG, personal

computer" is included, and, if "user classification" is

20   selected through the attribute input means 2, the part of

"computer" of "computer: software, CG, personal computer"

is taken out of the attribute structure storage means 11,

the retrieval is performed from the program information

storage means 1 through the program information

25   retrieval/classification means 3 by using this key word,

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and the user classification program table 120 is made by

classifying the corresponding programs to display it on

the program table display means 4. By this manner,

because the program table is displayed in accordance with

5   the user classification method previously registered, the

program table fitting the audience can be made by making

the user definition attribute.

As described above, in this embodiment, because

the user definition attribute structure can be established,

10   the manner of viewing program information by this

attribute defined by the user can be expanded. Although

the type of the program is defined in this example, it is

also possible that, for instance, program titles to be

classified are directly defined such as "child: Ponkikkies,

15   Tales of old Japan", or they are defined in levels such as

"child: animation, educational program", ... (the

first level)

"animation: Doraemon, Sazae san", "educational

program: saga drama, English conversation", ... (the

20   second level)

and they are actually used as

"child: Draemon, Sazae san, saga drama, English

conversation".

By this manner, in addition to the conventional manner of

25   viewing the program table, the manner from the point of

60

view that the user likes to look is possible.

7th Embodiment

Fig. 18 is a block diagram showing the

construction of the seventh embodiment of a system for

5   processing program information according to the present

invention. In Fig. 18, the reference 13 denotes same time

zone detection means for detecting programs in the same

time zone from program information. In this seventh

embodiment, the other construction of the system for

10   processing program information is the same as the above

first embodiment and includes program information storage

means 1, attribute input means 2, program information

retrieval/classification means 3, and program table

display means 4. The same time zone detection means 13 is

15   connected to detect the programs in the same time zone

based on program information sent from the program

information retrieval/classification means 3 and send them

to the program table display means 4.

The operation of the system for processing

20   program information according to the seventh embodiment

having this construction will be described. Fig. 19 is a

diagram for illustrating the display operation of the

program table in the system for processing program

information according to the seventh embodiment. In this

25   seventh embodiment, the table shown in Fig. 19 is a same

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time zone program table 121. In this same time zone

program table 121, time slots are arranged along the

vertical axis 102 and various user classification items

such as "computer", "diving", "my taste", ..., are

5   displayed along the horizontal axis 103. In the example

of Fig. 19, the prime time is selected as the time slot.

When there are plural programs in a predetermined time

zone as to a certain user classification item as a result

of the retrieval and classification, those plural programs

10   are displayed at the condition that they are overlapped on

the corresponding program information display columns 109.

In Fig. 19, the "computer" item in 19 o'clock zone, the

"my taste" item in 22 o'clock zone and so on correspond to

the overlap displays of the above pieces of program

15   information.

In this display condition, if a program displayed

with overlapping is selected (here, for instance, "Ii

Hito" is selected), "Ii Hito" is considered input through

the attribute input means 2 and the attribute becomes the

20   attributes of the two axes of the table, "my taste" and

"22 o'clock" and the corresponding programs are retrieved

from the program information storage means 1 by this

attribute to display them in order. In this retrieval and

display operation of program information, in the initial

25   overlap program display, the same time zone detection

62

means 13 detects the programs broadcast in the same time

zone from the program information storage means 1 through

the program information retrieval/classification means 3

to display the images overlapped by the detected number,

5   on the program table display means 4. By clicking the

program information display item 109 in which the plural

pieces of program information are overlapped and displayed,

by the data input means, the overlapped programs can be

looked in order as the pages are turned. By this manner,

10   information of the programs in the same time zone can be

looked without expanding the display area.

      8th Embodiment

      Fig. 20 is a block diagram showing the

construction of the eighth embodiment of a system for

15   processing program information according to the present

invention. In Fig. 20, the reference 14 denotes three-

dimensional program table display means for three-

dimensionally displaying the program table. This three-

dimensional program table display means 14 is used instead

20   of the program table display means 4 and can display a

predetermined piece of information in a three-dimensional

construction. In this eighth embodiment, the other

construction of the system for processing program

information is the same as the above first embodiment and

25   includes program information storage means 1, attribute

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input means 2, and program information

retrieval/classification means 3.

The operation of the system for processing

program information according to the seventh embodiment

5   having this construction will be described. Figs. 21 are

diagrams for illustrating the display operation of the

program table in the system for processing program

information according to the eighth embodiment. In this

eighth embodiment, in Fig. 21A, the program table by day

10   of week in relation to the prime time (8 o'clock to 10

o'clock), that is, the program table 108 in which time

slots only of the prime time (8 o'clock to 10 o'clock) are

arranged along the vertical axis 102 and the days of week

(Monday, Tuesday, Wednesday, ...) are arranged along the

15   horizontal axis 103, is displayed on the three-dimensional

program table display means 14. "time" representing the

time slot is displayed in the present attribute display

column 104 in the vicinity of the program table 108 and

"CH" representing the channel is displayed in the present

20   attribute display column 105. "prime time" is displayed

in the change attribute display column 106 and "day of

week" is displayed in the change attribute display column

107. "audience rating" representing the item attribute

wanted to investigate is displayed in the other attribute

25   display column 111.

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If the audience selects the audience rating from the attribute display column 111, those attribute instructions are considered input through the attribute input means and the program information

5 retrieval/classification means 3 performs the retrieval of the program information storage means 1 on the basis of the attribute. At this time, the program information retrieval/classification means 3 retrieves the corresponding audience rating from the program information

10 storage means 1 as to each set of attributes of "Monday, Tuesday, Wednesday, Thursday, Friday" and "8 o'clock, 9 o'clock, 10 o'clock" of the attributes of the two axes of the program table. As shown in Fig. 21B, the program table 122 is displayed on the three-dimensional program

15 table display means 14 in a three-dimensional form in accordance with the degree of the audience rating. As this manner, because information is three-dimensionally displayed, the retrieval content can be understood at a glance.

20   9th Embodiment

Fig. 22 is a block diagram showing the construction of the ninth embodiment of a system for processing program information according to the present invention. In Fig. 22, the reference 10 denotes attribute

25 input means display means for displaying information input

65

to attribute input means, 11 does attribute structure

storage means for storing data relative to the structure

of the attribute input through the attribute input means,

12 does attribute structure establishment means for

5   establishing the attribute structure, and 15 does

attribute structure extraction means for extracting the

attribute structure from program information. In this

ninth embodiment, the other construction of the system for

processing program information is the same as the above

10   first embodiment and includes program information storage

means 1, the attribute input means 2, program information

retrieval/classification means 3, and program table

display means 4. The attribute input means display means

10 is connected to the attribute input means 2 to display

15   the input means data and connected to send data to the

attribute structure storage means 11. The attribute

structure storage means 11 is connected to send data to

and receive data from the attribute input means display

means 10. The attribute structure storage means 11 is

20   also connected to the attribute structure establishment

means 12 and connected to receive the data of the

established attribute structure from this attribute

structure establishment means 12 and store them.

As for the operation of the system for processing

25   program information according to the ninth embodiment

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having this construction, the display operation of the

program table like as described in relation to the above

sixth embodiment, is performed. That is, because

structure data relative to various attributes are stored

5 in the attribute structure storage means 11, if the

audience selects and inputs the user classification

through the attribute input means 2 in Fig. 17A, the

program table in which the user classification was

performed is displayed as shown in Fig. 17B. This

10 embodiment is wherein the attribute structure for

performing the above user classification is extracted from

program information and established.

   For instance, it is assumed that the following

program information is stored in the program information

15 storage means 1. Here, for simplicity, the form of

"program title, program stamp" will be described. For

instance, it is assumed that there are data of "pro

baseball, Koshien Stadium, Hanshin vs Kyojin" and "pro

baseball news, Ya-Chu, Han-Kyo, Hiro-Yoko". "baseball" is

20 commonly included in the program titles. In comparison

with this, "Han", "Kyo" and "-" are commonly included in

the program details. The attribute structure extraction

means extracts the commonly included program titles and

program details as the attribute structure of "baseball:

25 Han, Kyo, -", and stores them in the attribute structure

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storage means 11 through the attribute structure

establishment means.

By this manner, the attribute input means 2 can

automatically be generated. For instance, the attribute

5   structure such as "O-157: sprouts, patient, self-governing

body" is extracted in program information, thereby, it

becomes possible that the program of a topical event such

as "O-157" is presented to the user.

10th Embodiment

10   Fig. 23 is a block diagram showing the

construction of the tenth embodiment of a system for

processing program information according to the present

invention. In Fig. 23, the reference 16 denotes past

program information preservation means for preserving

15   information of a program broadcast in the past, 17 does

past program information storage means for storing past

program information, 18 does past program information

acquisition means for acquiring past program information,

and 19 does program information selection means for

20   selecting program information. In this tenth embodiment,

the other construction of the system for processing

program information is the same as the above first

embodiment and includes program information storage means

1, attribute input means 2, program information

25   retrieval/classification means 3, and program table

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display means 4. The past program information

preservation means 16 receives program information from

the program information storage means 1 and retrieves

information of the program broadcast in the past from that

5   to preserves it for a time. The past program information

storage means 17 stores past program information preserved

in the past program information preservation means. The

program information selection means 19 is for selecting

and inputting information of the program broadcast in the

10   past to the past program information acquisition means 18.

The past program information acquisition means 18 acquires

information of the program broadcast in the past from the

past program information means 17 in accordance with the

selection input of program information from the program

15   information selection means 19 to send it to the program

table display means 4.

The operation of the system for processing

program information according to the tenth embodiment

having this construction will be described. Figs. 24 are

20   diagrams for illustrating the display operation of the

program table in the system for processing program

information according to the tenth embodiment. In this

tenth embodiment, at first, the basic program table 101 is

two-dimensionally displayed on the program table display

25   means 4 as shown in Fig. 24A. At the position adjacent to

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the program table 101 in the display picture, there are

provided display columns for the two-axes attributes

determining the construction of the program table

displayed at present, that is, present attribute display

5　columns 104 and 105.　In the example of Fig. 24A, "time"

representing the time slot is displayed in the present

attribute display column 104 and "CH" representing the

channel is displayed in the present attribute display

column 105.

10　　　　　If the audience inputs a predetermined program

(in the example of Fig. 24A, Nihon Television in the time

zone of 7 o'clock) in the above program table 101 through

the program information selection means 19, as shown in

Fig. 24B, the picture 123 showing program information of

15　the corresponding program is displayed on the program

table display means 4 and operation buttons 124 and 125

for selecting and indicating the outlines of the parts

broadcast in the past are displayed.　If the audience

clicks one of the operation buttons (125 in Fig. 24B), as

20　shown in Fig. 24C, the content of past program information

corresponding to that, that is, an outline picture 126 is

displayed on the program table display means 4.　By this

manner, past program information of dramas or the like can

be looked by using the system for processing program

25　information.

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11th Embodiment

Fig. 25 is a block diagram showing the
construction of the eleventh embodiment of a system for
processing program information according to the present

5 invention. In Fig. 25, the reference 20 denotes time
measurement means for measuring the present time, 21 dose
program confirmation means for confirming a program, 22
does program image selection means for selecting a program
image, and 23 does program image display means for

10 displaying the program image. In this eleventh embodiment,
the other construction of the system for processing
program information is the same as the above first
embodiment and includes program information storage means
1, attribute input means 2, program information

15 retrieval/classification means 3, and program table
display means 4. A clock or the like is used for the time
measurement means 20 and the measurement result is output
to the program confirmation means 21. The program
confirmation means 21 receives program information from

20 the program information retrieval/classification means 3
and collate it with data from the time measurement means
20 to confirm whether the program is on the air at present
or not, and output the confirmation result to the program
image selection means. The program image selection means

25 22 selects a program image in the case of the confirmation

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result from the program confirmation means 21 showing that
it is on the air at present, and sends it to the program
image 23. The program image display means 23 displays the
image of the program.

5   The operation of the system for processing
program information according to the eleventh embodiment
having this construction will be described. Figs. 26 are
diagrams for illustrating the display operation of the
program table in the system for processing program
10   information according to the eleventh embodiment. In this
eleventh embodiment, at first, the basic program table 101
is two-dimensionally displayed on the program table
display means 4 as shown in Fig. 26A. At the position
adjacent to the program table 101 in the display picture,
15   there are provided display columns for the two-axes
attributes determining the construction of the program
table displayed at present, that is, present attribute
display columns 104 and 105. In the example of Fig. 26A,
"time" representing the time slot is displayed in the
20   present attribute display column 104 and "CH" representing
the channel is displayed in the present attribute display
column 105.

          If the audience inputs a predetermined program or
a channel (in the example of Fig. 26A, the channel of
25   Nihon Television is selected) in the above program table

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101 through the attribute input means 2, as shown in Fig.

26B, a picture 127 showing program information of the

corresponding program, that is, the program on the air at

present, is displayed on the program table display means 4.

5　On the other hand, if the audience designates a

predetermined program in the above program table 101 and

inputs it through the attribute input means 2, the

designated piece of program information is sent from the

program information retrieval/classification means 3 to

10　the program confirmation means 21. The program

confirmation means 21 collates based on the data from the

time measurement means 20 whether the program is on the

air at present or not. If it is off the air, because a

signal showing that effect is output to the program image

15　selection means 22, no image is displayed on the program

image display means 23 and only the program information

picture 127 is displayed on the program table display

means 4 as shown in Fig. 26B. On the other hand, if it is

judged that the program is on the air at present, in the

20　above collation operation in the program confirmation

means 21, a signal showing that it is on the air is output

to the program image selection means 22. By this manner,

the program image selection means 22 operates to select a

program image, and an image picture 128 of the program is

25　displayed on the program image display means 23 as shown

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in Fig. 26C. Also in this case, the program information

picture 127 may be displayed on the program information

display means 4.

12th Embodiment

5   Fig. 27 is a block diagram showing the

construction of the twelfth embodiment of a system for

processing program information according to the present

invention. In Fig. 27, the reference 24 denotes program

relation information storage means for storing program

10   relation information, 25 does program relation information

retrieval/classification means for retrieving and

classifying program relation information, and 20 does time

measurement means like as in the above eleventh embodiment.

In this twelfth embodiment, the other construction of the

15   system for processing program information is the same as

the above first embodiment and includes program

information storage means 1, attribute input means 2,

program information retrieval/classification means 3, and

program table display means 4. In the program relation

20   information storage means 24, relation information of

storage means programs, for instance, information of

sponsors or the like is stored. The program relation

information retrieval/classification means 25 receives

program information from the program information

25   retrieval/classification means 3 to retrieve and classify

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program relation information relative to the program from

the program relation information retrieval/classification

means 25.   A clock or the like is used for the time

measurement means 20 and measurement result is output to

5   the program relation information retrieval/classification

means 25.

      The operation of the system for processing

program information according to the twelfth embodiment

having this construction will be described.   Figs. 28 are

10   diagrams for illustrating the display operation of the

program table in the system for processing program

information according to the twelfth embodiment.   In this

twelfth embodiment, at first, the basic program table 101

is two-dimensionally displayed on the program table

15   display means 4 as shown in Fig. 28A.   At the position

adjacent to the program table 101 in the display picture,

there are provided display columns for the two-axes

attributes determining the construction of the program

table displayed at present, that is, present attribute

20   display columns 104 and 105.   In the example of Fig. 28A,

"time" representing the time slot is displayed in the

present attribute display column 104 and "CH" representing

the channel is displayed in the present attribute display

column 105.   The indication of "<NOW!>" given to the time

25   axis represents the present time zone.   Although the

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present time zone indications " NOW!>" are displayed at

two positions in Fig. 28A, the reason is that there is

"the present" at each time because relative information to

the program is retrieved in accordance with a time

5　　schedule as described later.

　　　　If the audience inputs a predetermined channel

(in the example of Fig. 28A, the channel of Nihon

Television is selected) in the above program table 101

through the attribute input means 2, relative information

10　of the program is displayed on the program table display

means 4 in accordance with the time schedule of the

selected channel. In the example of Figs. 28, as for the

time zone of 6 o'clock of the channel selected by the

above channel selection, an advertisement display picture

15　129 of "Digicam" is displayed on the program table display

means 4 as relative information of the program as shown in

Fig. 28B. On the other hand, as for the time zone nearly

of 8 o'clock according to the time schedule, an outline

picture 130 of the program "the third part, Ii Hito" is

20　displayed on the program table display means 4 as relative

information of the program as shown in Fig. 28C. The time

schedule in this case is controlled based on the

measurement data from the time measurement means 20. What

is retrieved as program relation information is previously

25　established in the program relation information

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retrieval/classification means 25.

Although program relation information is
displayed by the input by the user and the time in this
example, it is also possible that previous inputs by the

5   user are maintained to renew the display of program
relation information by the time changing. For instance,
if a specific broadcasting station (for instance, Nihon
Television) is previously selected, it is also possible to
retrieve and display program relation information by the

10   time elapsing after that.

13th Embodiment

Fig. 29 is a block diagram showing the
construction of the thirteenth embodiment of a system for
processing program information according to the present

15   invention. In Fig. 29, the reference 26 denotes
transmission and reception means for transmitting and
receiving program information and a program image. To
this transmission and reception means 26, attribute input
means 2, user information input means 27, program table

20   display means 4 and program image display means 23 are
connected to constitute a reception side terminal (that is,
a user side terminal). Reference 28 denotes transmission
and reception means disposed correspondingly to the above
transmission and reception means 26 for transmitting

25   program information and a program image to that

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transmission and reception means 26 and receiving them

from that transmission and reception means 26. To this

transmission and reception means 28, program information

retrieval/classification means 3 and user information

5   registration means 29 are connected. Memory means 30 is

connected to the program information

retrieval/classification means 3. To this memory means 30,

renewal information means 31 and program image selection

means 22 are connected. Time measurement means 20 is

10 connected to the program image selection means 22. The

program information retrieval/classification means 3, the

time measurement means 20, the program image selection

means 22, the transmission and reception means 28, the

user information registration means 29, the memory means

15 30 and the renewal information means 31 constitute a

server side terminal.

In the user side terminal, the attribute input

means 2 is for inputting various program information

retrieval conditions or the like by the audience. The

20 user information input means 27 is means for the audience

to input his name, address or the like and those input

data are transmitted through the transmission and

reception means 26 and 28 to the server side terminal.

The program table display means 4 and the program image

25 display means 23 receive program table data and a program

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image from the transmission and reception means 26 and display them, respectively.

In the server side terminal, the program information retrieval/classification means 3 retrieves and
5 classifies various data stored in the memory means 30 and sends the result to the transmission and reception means 28. The user information registration means 29 sends user information sent from the transmission and reception means 28 which received user information transmitted from the
10 user side terminal, to the memory means 30 and registers it. The user registration operation is carried out at an optional time at the audience side. In the memory means 30, various data such as program information, relative information, renewal information, user information,
15 programs, images and sounds. The renewal information means 31 is for maintaining various renewal matters such as the time change and the content change of a program to the memory means 30, and sending them to the memory means 30. The program image selection means 22 is for selecting
20 and outputting a program image, that is, image and sound data to the memory means 30. The time measurement means 20 is for controlling with time the operation of the program image means 22. The memory means 30 is memory means like as the program information storage means 1 in
25 the above storage means embodiment, and stores more kinds

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of data than that program information storage means 1.

The operation of the system for processing

program information according to the thirteenth embodiment

having this construction will be described. Figs. 30 are

5   diagrams for illustrating the display operation of the

program table in the system for processing program

information according to the thirteenth embodiment. In

this thirteenth embodiment, at first, the basic program

table 101 is two-dimensionally displayed on the program

10   table display means 4 as shown in Fig. 30A. At the

position adjacent to the program table 101 in the display

picture, there are provided display columns for the two-

axes attributes determining the construction of the

program table displayed at present, that is, present

15   attribute display columns 104 and 105. In the example of

Fig. 30A, "time" representing the time slot is displayed

in the present attribute display column 104 and "CH"

representing the channel is displayed in the present

attribute display column 105. The indication of " NOW!>"

20   given to the time axis represents the present time zone.

Here, if the audience inputs a predetermined

program (in the example of Fig. 30A, Nihon Television in

the time zone of 6 o'clock is selected) in the above

program table 101 through the attribute input means 2,

25   after the server side transmission and reception means 28

80

receives information of the selected program, the program

information retrieval/classification means 3 performs the

retrieval as to the memory means 30 to read out program

information or relative information to the program. These

5   read-out data of program information or the like are sent

from the program information retrieval/classification

means 3 to the transmission and reception means 28 to

transmit them from the transmission and reception means 28

to the user side terminal. The transmitted data is

10   received by the transmission and reception means 26 to be

displayed on the program table display means 4.

As another operation, the transmission operation

of the program image is shown. By the above attribute

input, a program before the time indicated by the present

15   time " NOW!>" is input as the attribute. In such a case,

programs that had been on the air are recorded and, a

favorite program is selected, images of the program can be

looked. In this case, the set of the time measurement

means 20 and the program image selection means 22 is

20   constituted by a video device, which records all programs

on the air and stores the data in the memory means 30. If

a program that had already been on the air is selected

through the attribute input means as described above, the

program information is transmitted and received through

25   the transmission and reception means 26 and 28, and image

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data of the corresponding program are retrieved from the

memory means 30 through the program information

retrieval/classification means 3 to transmit them back.

On the reception side, an image picture 128 is displayed

5   on the program image display means 23 as shown in Fig. 30B.

As still another operation, as described in the

above eleventh embodiment, if the program meeting the time

indicated by the present time " NOW!>" is input as the

attribute through the attribute input means 2, because the

10   program is on the air at present, the program image

selection means 22 operates to select the image and sound

of the program and instruct the memory means 30. By this

manner, the corresponding image and sound (program image)

are read out from the memory means 30 and sent through the

15   program information retrieval/classification means 3 to

the transmission and reception means 28 to be transmitted

to the reception side. On the reception side, the image

picture 128 of the program is displayed on the program

image display means 23 by the similar manner to Fig. 30B.

20   By this manner, a program forgotten to reserve for

recording or a program that had ended can be viewed at any

time.

14th Embodiment

Fig. 31 is a block diagram showing the

25   construction of the fourteenth embodiment of a system for

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processing program information according to the present

invention.   In Fig. 31, the reference 26 denotes

transmission and reception means for transmitting and

receiving program information and a program image.   To

5   this transmission and reception means 26, attribute input

means 2, image sequence input means 32, and program table

display means 4 are connected to constitute a user side

terminal.   Reference 28 denotes transmission and reception

means disposed correspondingly to the above transmission

10   and reception means 26 for transmitting program

information and a program image to that transmission and

reception means 26 and receiving them from that

transmission and reception means 26.   To this transmission

and reception means 28, program information

15   retrieval/classification means 3 and image sequence

registration means 33 are connected.   Memory means 30 and

image sequence storage means 34 are connected to the

program information retrieval/classification means 3.   The

program information retrieval/classification means 3, the

20   transmission and reception means 28, the memory means 30,

the image sequence registration means 33, and the image

sequence storage means 34 constitute a server side

terminal.

In the user side terminal, the attribute input

25   means 2 is for inputting various program information

83

retrieval conditions or the like by the audience. The

image sequence input means 32 is means for inputting an

image sequence made by the user and those input data are

transmitted through the transmission and reception means

5   26 and 28 to the server side terminal. The program table

display means 4 receives program table data from the

transmission and reception means 26 and display them,

respectively.

In the server side terminal, the program

10   information retrieval/classification means 3 retrieves and

classifies various data stored in the memory means 30 and

the image sequence storage means 34 and sends the result

to the transmission and reception means 28. The image

sequence storage means 34 stores the image sequence

15   received from the user side terminal and sends the image

sequence data to the program information

retrieval/classification means 3. The image sequence

registration means 33 is for sending the image sequence

transmitted from the user side terminal and received by

20   the transmission and reception means 28 and registering it.

The operation of the system for processing

program information according to the fourteenth embodiment

having this construction will be described. Figs. 32 are

diagrams for illustrating the display operation of the

25   program table in the system for processing program

84

information according to the fourteenth embodiment. In

this fourteenth embodiment, at first, a program table 131

in the condition that a station name is added to the basic

program table is two-dimensionally displayed on the

5   program table display means 4 as shown in Fig. 32A. This

program table 131 has an extra user channel 132 in

addition to the existing channels. At the position

adjacent to the program table 131 in the display picture,

there are provided display columns for the two-axes

10   attributes determining the construction of the program

table displayed at present, that is, present attribute

display columns 104 and 105. In the example of Fig. 32A,

"time" representing the time slot is displayed in the

present attribute display column 104 and "CH" representing

15   the channel is displayed in the present attribute display

column 105.

The image sequence made by the user is input by

the image sequence input means 32 in the user side

terminal and the data is sent to the transmission and

20   reception means 26. The transmission and reception means

26 transmits them to the server side terminal. In the

server side terminal, the transmission and reception means

28 receives the transmitted data of the image sequence to

send those data to the image sequence registration means

25   33. The image sequence registration means 33 sends the

85

image sequence transmitted from the user side terminal and

received by the transmission and reception means 28, to

the image sequence storage means 34 and registers it. The

registered image sequence is stored in the image sequence

5   storage means 34.

Here, if the audience inputs a predetermined

program (in the example of Fig. 32A, the user channel 132

in the time zone of 6 o'clock is selected) in the user

channel 132 in the above program table 131 through the

10   attribute input means 2, after the server side

transmission and reception means 28 receives information

of the selected program, the program information

retrieval/classification means 3 performs the retrieval as

to the memory means 30 and the image sequence storage

15   means 34. Because the designated piece of program

information is stored in the image sequence storage means

34, the program information retrieval/classification means

3 reads out the corresponding data from the image sequence

storage means 34. These read-out image sequence data are

20   sent from the program information retrieval/classification

means 3 to the transmission and reception means 28 to

transmit them from the transmission and reception means 28

to the user side terminal. An image sequence picture 133

that is the transmitted data is received by the

25   transmission and reception means 26 and displayed on the

86

program table display means 4 as shown in Fig. 32B.

15th Embodiment

Fig. 33 is a block diagram showing the
construction of the fifteenth embodiment of a system for
5　processing program information according to the present
invention. In Fig. 33, the reference 26 denotes
transmission and reception means for transmitting and
receiving program information and a program image. To
this transmission and reception means 26, attribute input
10　means 2 and program table display means 4 are connected to
constitute a user side terminal. Reference 28 denotes
transmission and reception means disposed correspondingly
to the above transmission and reception means 26 for
transmitting program information and a program image to
15　that transmission and reception means 26 and receiving
them from that transmission and reception means 26. To
this transmission and reception means 28, program
information retrieval/classification means 3 is connected.
Memory means 30 and selected program information
20　registration means 35 are connected to the program
information retrieval/classification means 3. Selected
program information storage means 36 is connected to the
selected program information registration means 35.
Furthermore, to this selected program information storage
25　means 36, selected program information calculation means

87

37 is connected. The program information

retrieval/classification means 3, the transmission and

reception means 28, the memory means 30, the selected

program information registration means 35, the selected

5   program information storage means 36, and the selected

program information calculation means 37 constitute a

server side terminal.

In the user side terminal, the attribute input

means 2 is for inputting various program information

10   retrieval conditions or the like by the audience. The

program table display means 4 receives program table data

from the transmission and reception means 26 and display

them, respectively.

In the server side terminal, the program

15   information retrieval/classification means 3 retrieves and

classifies various data stored in the memory means 30 and

sends the result to the transmission and reception means

28. The selected program information registration means

35 is for sending information of the program selected by

20   the user to the selected program information storage means

36 and registering it. The selected program information

storage means 36 stores selected program information

received from the user side terminal and sends the

selected program information to the selected program

25   information calculation means 37. The selected program

88

information calculation means 37 is for calculating the

number of people viewing the same program and the audience

rating in relation to program information selected by the

user and sending the result to the program information

5   retrieval/classification means 3.

The operation of the system for processing

program information according to the fifteenth embodiment

having this construction will be described. The

description of the operation in this fifteenth embodiment

10   is almost the same as the above description by using Fig.

3 or Fig. 21. For instance, in view of Fig. 21, at first,

in Fig. 21A, the program table by day of week in relation

to the prime time (8 o'clock to 10 o'clock), that is, the

program table 108 in which the time slots only in the

15   prime time (8 o'clock to 10 o'clock) are arranged along

the vertical axis 102 and the days of week (Monday,

Tuesday, Wednesday, ...) are arranged along the horizontal

axis 103, is displayed on the program table display means

4. At the position adjacent to the program table 108 in

20   the display picture, there are provided display columns

for the two-axes attributes determining the construction

of the program table displayed at present, that is,

present attribute display columns 104 and 105. In the

example of Fig. 21A, "time" representing the time slot is

25   displayed in the present attribute display column 104 and

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"CH" representing the channel is displayed in the present

attribute display column 105.   Another display may be

performed in the picture.

Selected program information made by the user is

5   input through the attribute input means 2 in the user side

terminal and the data is sent to the transmission and

reception means 26.   The transmission and reception means

26 transmits them to the server side terminal.   In the

server side terminal, the transmission and reception means

10   28 receives the transmitted data of selected program

information and sends the data to the selected program

information registration means 35.   The selected program

information registration means 35 sends selected program

information transmitted from the user side terminal and

15   received by the transmission and reception means 28, to

the selected program information storage means 36 and

registers it.   Selected program information registered is

stored in the selected program information storage means

36.

20   Here, if the audience inputs a predetermined

program in the above program table 108 through the

attribute input means 2, after the server side

transmission and reception means 28 receives the selected

program, the program information retrieval/classification

25   means 3 sends the program to the selected program

90

information registration means 35 and performs the

retrieval as to the memory means 30 to read out program

information or relative information to the program. On

the other hand, the selected program information

5   registration means 35 which received selected program

information from the program information

retrieval/classification means 3 sends the data to the

selected program information storage means 36. The

selected program information calculation means 37

10   calculates the number of people viewing the same program

and the audience rating as to the program on the basis of

the data renewal in the selected program information

storage means 36 and sends the result to the program

information retrieval/classification means 3. The program

15   information retrieval/classification means 3 sends the

data of program information or the like read out from the

memory means 30 and the calculation result sent from the

selected program information calculation means 37 to the

transmission and reception means 28 together and they are

20   transmitted from the transmission and reception means 28

to the user side terminal. The selected program

information picture that is the transmitted data is

received by the transmission and reception means 26 and

displayed on the program table display means 4 in the

25   manner as shown in Fig. 4B or in the manner as shown in

Fig. 21B.

16th Embodiment

Fig. 34 is a block diagram showing the

construction of the sixteenth embodiment of a system for

5   processing program information according to the present

invention. In Fig. 34, the reference 26 denotes

transmission and reception means for transmitting and

receiving program information. To this transmission and

reception means 26, storage means 38 for program

10   information including a program retrieval index is

connected. To this storage means 38 for program

information including a program retrieval index, program

information retrieval/classification means 3 is connected.

Attribute input means 2 and program table display means 4

15   are connected to the program information

retrieval/classification means 3. Those functional parts

constitute a user side terminal. Reference 28 denotes

transmission and reception means disposed correspondingly

to the above transmission and reception means 26 for

20   transmitting program information and a program image to

that transmission and reception means 26 and receiving

them from that transmission and reception means 26. To

this transmission and reception means 28, storage means 39

for program information including a program retrieval

25   index is connected. Generation means 41 for program

92

information including a program retrieval index is

connected to the storage means 39 for program information

including a program retrieval index. In Fig. 34, the

reference 40 denotes program retrieval index storage means

5   40. To this program retrieval index storage means 40,

program retrieval index generation means 42. Furthermore,

to this program retrieval index generation means 42,

program information storage means 1 is connected. The

program information storage means 1, the transmission and

10   reception means 28, the storage means 39 for program

information including a program retrieval index, the

generation means 41 for program information including a

program retrieval index, the program retrieval index

storage means 40, and the program retrieval index

15   generation means 42 constitute a server side terminal.

In the user side terminal, the attribute input

means 2 is for inputting various program information

retrieval conditions or the like by the audience. The

program information retrieval/classification means 3 is

20   for retrieving and classifying program information

including a program retrieval index stored in the storage

means 38 for program information including a program

retrieval index. The program table display means 4

receives the program table data from the program

25   information retrieval/classification means 3 to display

93

them.

In the server side terminal, the storage means 39
for program information including a program retrieval
index is for storing program information including a
5   program retrieval index generated on the server side. The
generation means 41 for program information including a
program retrieval index is for generating program
information including a program retrieval index by adding
an index for the program retrieval to program information
10 sent from the program information storage means 1. The
program retrieval index storage means 40 is for storing
the data relative to the index to be added to program
information. The program retrieval index generation means
42 is for generating the data relative to the index to be
15 added to program information.

The operation of the system for processing
program information according to the sixteenth embodiment
having this construction will be described. In this
sixteenth embodiment, on the server side, program
20 information stored in the program information storage
means 1 is received by the program retrieval index
generation means 42 and the index for the program
retrieval is generated based on the above program
information and the generated program retrieval index is
25 sent to the program retrieval index storage means 40 to be

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stored.   The data from the program information storage

means 1 and the data from the program retrieval index

storage means 40 are sent to the generation means 41 for

program information including a program retrieval index to

5   generate program information including a program retrieval

index.

Program information including a program retrieval

index generated on the server side is sent from the

storage means 39 for program information including a

10   program retrieval index to the transmission and reception

means 28 and transmitted from the transmission and

reception means 28 to the user side terminal.   In the user

side terminal, the transmission and reception means 26

receives the transmitted data of the above program

15   information including a program retrieval index and those

data are stored in the storage means 38 for program

information including a program retrieval index.

In the program information retrieval operation

based on the program table, if the audience inputs a

20   program retrieval index as to a predetermined program in

the program table (it can be the program table 101 used in

the above embodiments) through the attribute input means 2,

the program information retrieval/classification means 3

retrieves the selected program in the storage means 38 for

25   program information including a program retrieval index to

95

read out program information. The read-out program

information is sent to the program table display means 4

to be displayed there.

17th Embodiment

5   Fig. 35 is a block diagram showing the

construction of the seventeenth embodiment of a system for

processing program information according to the present

invention. In Fig. 35, the reference 26 denotes

transmission and reception means for transmitting and

10   receiving program information. To this transmission and

reception means 26, storage means 38 for program

information including a program retrieval index is

connected. To this storage means 38 for program

information including a program retrieval index, program

15   information retrieval/classification means 3 and user

attribute adaptation means 43 are connected. Attribute

input means 2, program table display means 4 and the user

attribute adaptation means 43 are connected to the program

information retrieval/classification means 3. User

20   attribute storage means 44 is connected to the attribute

input means 2. This user attribute storage means 44 is

connected so that data can be sent to and received from

the user attribute adaptation means 43. Those functional

parts constitute a user side terminal. Reference 28

25   denotes transmission and reception means disposed

96

correspondingly to the above transmission and reception

means 26 for transmitting program information and a

program image to that transmission and reception means 26

and receiving them from that transmission and reception

5   means 26. To this transmission and reception means 28,

storage means 39 for program information including a

program retrieval index is connected. Generation means 41

for program information including a program retrieval

index is connected to the storage means 39 for program

10   information including a program retrieval index. In Fig.

35, the reference 40 denotes program retrieval index

storage means 40. To this program retrieval index storage

means 40, program retrieval index generation means 42.

Furthermore, to this program retrieval index generation

15   means 42, program information storage means 1 is connected.

The program information storage means 1, the transmission

and reception means 28, the storage means 39 for program

information including a program retrieval index, the

generation means 41 for program information including a

20   program retrieval index, the program retrieval index

storage means 40, and the program retrieval index

generation means 42 constitute a server side terminal.

In the user side terminal, the attribute input

means 2 is for inputting various program information

25   retrieval conditions or the like by the audience. The

97

program information retrieval/classification means 3 is

for retrieving and classifying program information

including a program retrieval index stored in the storage

means 38 for program information including a program

5   retrieval index. The program table display means 4

receives the program table data from the program

information retrieval/classification means 3 to display

them. The user attribute storage means 44 is for

maintaining the data relative to the user attribute in the

10   user side terminal. The user attribute adaptation means

is for examining whether the user attribute is adaptable

or not upon the retrieval of program information.

In the server side terminal, the storage means 39

for program information including a program retrieval

15   index is for storing program information including a

program retrieval index generated on the server side. The

generation means 41 for program information including a

program retrieval index is for generating program

information including a program retrieval index by adding

20   an index for the program retrieval to program information

sent from the program information storage means 1. The

program retrieval index storage means 40 is for storing

the data relative to the index to be added to program

information. The program retrieval index generation means

25   42 is for generating the data relative to the index to be

98

added to program information.

The operation of the system for processing

program information according to the seventeenth

embodiment having this construction will be described. In

5   this seventeenth embodiment, on the server side, program

information stored in the program information storage

means 1 is received by the program retrieval index

generation means 42 and the index for the program

retrieval is generated based on the above program

10   information and the generated program retrieval index is

sent to the program retrieval index storage means 40 to be

stored. The data from the program information storage

means 1 and the data from the program retrieval index

storage means 40 are sent to the generation means 41 for

15   program information including a program retrieval index to

generate program information including a program retrieval

index.

Program information including a program retrieval

index generated on the server side is sent from the

20   storage means 39 for program information including a

program retrieval index to the transmission and reception

means 28 and transmitted from the transmission and

reception means 28 to the user side terminal. In the user

side terminal, the transmission and reception means 26

25   receives the transmitted data of the above program

99

information including a program retrieval index and those

data are stored in the storage means 38 for program

information including a program retrieval index.

In the program information retrieval operation

5   based on the program table, if the audience inputs a

program retrieval index as to a predetermined program in

the program table (it can be the program table 101 used in

the above embodiments) through the attribute input means 2,

the program information retrieval/classification means 3

10   retrieves the selected program in the storage means 38 for

program information including a program retrieval index.

At this time, the user attribute adaptation means 43

receives the user attribute data from the user attribute

storage means 44 to examine whether the program subjected

15   to the retrieval adapts to the user attribute or not. If

the user attribute is adaptable, program information is

read out. The read-out program information is sent to the

program table display means 4 to be displayed there. On

the other hand, if the user attribute is not adaptable,

20   program information is not read out and the program

information is not displayed on the program table display

means 4.

18th Embodiment

Fig. 36 is a block diagram showing the

25   construction of the eighteenth embodiment of a system for

100

processing program information according to the present

invention. In Fig. 36, the reference 26 denotes

transmission and reception means for transmitting and

receiving program information. To this transmission and

5   reception means 26, storage means 38 for program

information including a program retrieval index is

connected. To this storage means 38 for program

information including a program retrieval index, program

information retrieval/classification means 3 is connected.

10   Attribute input means 2, and program table display means 4

are connected to the program information

retrieval/classification means 3. Those functional parts

constitute a user side terminal. Reference 28 denotes

transmission and reception means disposed correspondingly

15   to the above transmission and reception means 26 for

transmitting program information and a program image to

that transmission and reception means 26 and receiving

them from that transmission and reception means 26. To

this transmission and reception means 28, program

20   information retrieval/classification means 45. To this

program information retrieval/classification means 45,

storage means 39 for program information including a

program retrieval index is connected. Generation means 41

for program information including a program retrieval

25   index is connected to the storage means 39 for program

101

information including a program retrieval index. In Fig.

36, the reference 40 denotes program retrieval index

storage means 40. To this program retrieval index storage

means 40, program retrieval index generation means 42.

5 Furthermore, to this program retrieval index generation

means 42, program information storage means 1 is connected.

The program information storage means 1, the transmission

and reception means 28, the storage means 39 for program

information including a program retrieval index, the

10 generation means 41 for program information including a

program retrieval index, the program retrieval index

storage means 40, the program retrieval index generation

means 42, and the program information

retrieval/classification means 45 constitute a server side

15 terminal.

    In the user side terminal, the attribute input

means 2 is for inputting various program information

retrieval conditions or the like by the audience. The

program information retrieval/classification means 3 is

20 for retrieving and classifying program information

including a program retrieval index stored in the storage

means 38 for program information including a program

retrieval index. The program table display means 4

receives the program table data from the program

25 information retrieval/classification means 3 to display

102

them.

　　　　In the server side terminal, the storage means 39
for program information including a program retrieval
index is for storing program information including a
5　program retrieval index generated on the server side. The
generation means 41 for program information including a
program retrieval index is for generating program
information including a program retrieval index by adding
an index for the program retrieval to program information
10　sent from the program information storage means 1. The
program retrieval index storage means 40 is for storing
the data relative to the index to be added to program
information. The program retrieval index generation means
42 is for generating the data relative to the index to be
15　added to program information. The program information
retrieval/classification means 45 is for retrieving
program information including a program retrieval index
stored in the storage means 39 for program information
including a program retrieval index.

20　　　　The operation of the system for processing
program information according to the eighteenth embodiment
having this construction will be described. In this
eighteenth embodiment, on the server side, program
information stored in the program information storage
25　means 1 is received by the program retrieval index

103

generation means 42 and the index for the program

retrieval is generated based on the above program

information and the generated program retrieval index is

sent to the program retrieval index storage means 40 to be

5   stored. The data from the program information storage

means 1 and the data from the program retrieval index

storage means 40 are sent to the generation means 41 for

program information including a program retrieval index to

generate program information including a program retrieval

10   index.

Program information including a program retrieval

index generated on the server side is sent from the

storage means 39 for program information including a

program retrieval index to the transmission and reception

15   means 28 and transmitted from the transmission and

reception means 28 to the user side terminal. In the user

side terminal, the transmission and reception means 26

receives the transmitted data of the above program

information including a program retrieval index and those

20   data are stored in the storage means 38 for program

information including a program retrieval index.

In the program information retrieval operation

based on the program table, if the audience inputs a

program retrieval index as to a predetermined program in

25   the program table (it can be the program table 101 used in

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the above embodiments) through the attribute input means 2,

the program information retrieval/classification means 3

retrieves the selected program in the storage means 38 for

program information including a program retrieval index to

5   read out program information. The read-out program

information is sent to the program table display means 4

to be displayed there. However, if, in the user side

terminal, the corresponding program information is not

retrieved even when the program information

10   retrieval/classification means 3 retrieves the selected

program in the storage means 38 for program information

including a program retrieval index, the retrieval of

program information is performed in the server side

terminal. In this case, the attribute data input in the

15   user side terminal are sent from the program information

retrieval/classification means 3 to the transmission and

reception means 26, and after that, transmitted from the

transmission and reception means 26 to the server side

terminal. This attribute data are sent to the program

20   information retrieval/classification means 45 in the

server side terminal. The program information

retrieval/classification means 45 on the server side

performs the retrieval in the storage means 39 for program

information including a program retrieval index and if

25   there is program information, it is read out. The read-

105

out program information is transmitted from the

transmission and reception means 28 to the user side

terminal and sent to the program table display means 4 in

the audience terminal to be displayed there. By this

5   manner, even if the retrieval of program information

including a program retrieval index ended in failure in

the user side terminal, the similar program information

retrieval can be performed in the server side terminal so

the certainty of the operation increases.

10   19th Embodiment

Fig. 37 is a block diagram showing the

construction of the nineteenth embodiment of a system for

processing program information according to the present

invention. In Fig. 37, the reference 26 denotes

15   transmission and reception means for transmitting and

receiving program information. To this transmission and

reception means 26, storage means 38 for program

information including a program retrieval index is

connected. To this storage means 38 for program

20   information including a program retrieval index, program

information retrieval/classification means 3 and user

attribute adaptation means 43 are connected. Attribute

input means 2, program table display means 4 and the user

attribute adaptation means 43 are connected to the program

25   information retrieval/classification means 3. User

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attribute storage means 44 is connected to the attribute

input means 2. This user attribute storage means 44 is

connected so that data can be sent to and received from

the user attribute adaptation means 43. Those functional

5   parts constitute a user side terminal. Reference 28

denotes transmission and reception means disposed

correspondingly to the above transmission and reception

means 26 for transmitting program information and a

program image to that transmission and reception means 26

10   and receiving them from that transmission and reception

means 26. To this transmission and reception means 28,

program information retrieval/classification means 45. To

this program information retrieval/classification means 45,

storage means 39 for program information including a

15   program retrieval index is connected. Generation means 41

for program information including a program retrieval

index is connected to the storage means 39 for program

information including a program retrieval index. In Fig.

37, the reference 40 denotes program retrieval index

20   storage means 40. To this program retrieval index storage

means 40, program retrieval index generation means 42.

Furthermore, to this program retrieval index generation

means 42, program information storage means 1 is connected.

The program information storage means 1, the transmission

25   and reception means 28, the storage means 39 for program

107

information including a program retrieval index, the

generation means 41 for program information including a

program retrieval index, the program retrieval index

storage means 40, the program retrieval index generation

5   means 42, and the program information

retrieval/classification means 45 constitute a server side

terminal.

In the user side terminal, the attribute input

means 2 is for inputting various program information

10 retrieval conditions or the like by the audience. The

program information retrieval/classification means 3 is

for retrieving and classifying program information

including a program retrieval index stored in the storage

means 38 for program information including a program

15 retrieval index. The program table display means 4

receives the program table data from the program

information retrieval/classification means 3 to display

them. The user attribute storage means 44 is for

maintaining the data relative to the user attribute in the

20 user side terminal. The user attribute adaptation means

is for examining whether the user attribute is adaptable

or not upon the retrieval of program information.

In the server side terminal, the storage means 39

for program information including a program retrieval

25 index is for storing program information including a

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program retrieval index generated on the server side. The

generation means 41 for program information including a

program retrieval index is for generating program

information including a program retrieval index by adding

5   an index for the program retrieval to program information

sent from the program information storage means 1. The

program retrieval index storage means 40 is for storing

the data relative to the index to be added to program

information. The program retrieval index generation means

10   42 is for generating the data relative to the index to be

added to program information. The program information

retrieval/classification means 45 is for retrieving

program information including a program retrieval index

stored in the storage means 39 for program information

15   including a program retrieval index.

The operation of the system for processing

program information according to the nineteenth embodiment

having this construction will be described. In this

nineteenth embodiment, on the server side, program

20   information stored in the program information storage

means 1 is received by the program retrieval index

generation means 42 and the index for the program

retrieval is generated based on the above program

information and the generated program retrieval index is

25   sent to the program retrieval index storage means 40 to be

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stored. The data from the program information storage

means 1 and the data from the program retrieval index

storage means 40 are sent to the generation means 41 for

program information including a program retrieval index to

5   generate program information including a program retrieval

index.

        Program information including a program retrieval

index generated on the server side is sent from the

storage means 39 for program information including a

10   program retrieval index to the transmission and reception

means 28 and transmitted from the transmission and

reception means 28 to the user side terminal. In the user

side terminal, the transmission and reception means 26

receives the transmitted data of the above program

15   information including a program retrieval index and those

data are stored in the storage means 38 for program

information including a program retrieval index.

        In the program information retrieval operation

based on the program table, if the audience inputs a

20   program retrieval index as to a predetermined program in

the program table (it can be the program table 101 used in

the above embodiments) through the attribute input means 2,

the program information retrieval/classification means 3

retrieves the selected program in the storage means 38 for

25   program information including a program retrieval index.

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At this time, the user attribute adaptation means 43

receives the user attribute data from the user attribute

storage means 44 to examine whether the program subjected

to the retrieval adapts to the user attribute or not. If

5   the user attribute is adaptable, program information is

read out. The read-out program information is sent to the

program table display means 4 to be displayed there. On

the other hand, if the user attribute is not adaptable,

program information is not read out and the program

10   information is not displayed on the program table display

means 4.

In the above retrieval operation, the different

retrieval result is obtained according to the adaptation

or non-adaptation of the user attribute. In the case of

15   the adaptable user attribute, if, in the user side

terminal, the corresponding program information is not

retrieved even when the program information

retrieval/classification means 3 retrieves the selected

program in the storage means 38 for program information

20   including a program retrieval index, the retrieval of

program information is performed in the server side

terminal. In this case, the attribute data input in the

user side terminal are sent from the program information

retrieval/classification means 3 to the transmission and

25   reception means 26, and after that, transmitted from the

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transmission and reception means 26 to the server side

terminal. This attribute data are sent to the program

information retrieval/classification means 45 in the

server side terminal. The program information

5   retrieval/classification means 45 on the server side

performs the retrieval in the storage means 39 for program

information including a program retrieval index and if

there is program information, it is read out. The read-

out program information is transmitted from the

10   transmission and reception means 28 to the user side

terminal and sent to the program table display means 4 in

the audience terminal to be displayed there. By this

manner, in addition to performing the certain retrieval in

the user side terminal by examining the adaptation of the

15   user attribute, even if the retrieval of program

information including a program retrieval index ended in

failure, the similar program information retrieval can be

performed in the server side terminal so the certainty of

the operation increases.

20   20th Embodiment

            Fig. 38 is a block diagram showing the

construction of the twentieth embodiment of a system for

processing program information according to the present

invention. In Fig. 38, the reference 1 denotes program

25   information storage means for storing received program

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information, 2 does attribute input means through which

attribute information to be used as two-axes attributes of

a program table and the others of attribute information

are input, 3 does program information

5   retrieval/classification means for retrieving or

classifying a program in program information on the basis

of input attribute information to make the program table,

and 4 does program table display means for displaying the

made program table. The reference 22 denotes program

10   image selection means, 20 does time measurement means, 46

does program image recording means for recording a program

image, 47 does program video-recording information

retrieval/classification means, and 23 does program image

display means for displaying the program image. The

15   program image recording means 46 is constituted by, for

instance, a video device for recording an image of the

program determined by a timer control under the control of

the time measurement means 20. The program image

recording means 46 is also constructed to record a program

20   image by an instruction from the program information

retrieval/classification means 3. The program image

selection means 22 starts the program image recording

means 46 by receiving an instruction from the program

information retrieval/classification means 3. The program

25   image display means 23 displays the image of the program.

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The operation of the system for processing

program information according to the twentieth embodiment

having this construction will be described. Figs. 39 are

diagrams for illustrating the display operation of the

5   program table in the system for processing program

information according to the twentieth embodiment. In

this twentieth embodiment, at first, the basic program

table 101 is two-dimensionally displayed on the program

table display means 4 as shown in Fig. 39A. At the

10   position adjacent to the program table 101 in the display

picture, there are provided display columns for the two-

axes attributes determining the construction of the

program table displayed at present, that is, present

attribute display columns 104 and 105. In the example of

15   Fig. 39A, "time" representing the time slot is displayed

in the present attribute display column 104 and "CH"

representing the channel is displayed in the present

attribute display column 105.

Here, if the audience selects a certain program

20   through the attribute input means 2, the program

information retrieval/classification means 3 retrieves the

program as to the program image storage means 1. If the

program is recorded, a play back button 135 is displayed

with program information on the program information

25   picture 134 of the program table display means 4 as shown

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in Fig. 39B. If it is not recorded and if it is off the

air at present, a recording reservation button 136 is

displayed on the program information picture 134 of the

program table display means 4. If it is on the air, a

5   recording button 137 is displayed on the program

information picture 134 of the program table display means

4. Based on the button display as described above, if the

audience clicks the play back button 135, this operation

information is sent through the program information

10   retrieval/classification means 3 to the program image

recording means 46 to play back the program. If the

recording reservation button 136 is clicked, this

operation information is sent through the program

information retrieval/classification means 3 to the

15   program image recording means 46 to reserve the program

for recording. By this manner, the program image

recording means 46 and the time measurement means 20 are

set. Furthermore, if the recording button 137 is clicked,

this operation information is sent through the program

20   information retrieval/classification means 3 and the

program image selection means 22 to the program image

recording means 46 to record the program immediately. By

this manner, even in the case of no time for viewing the

program, or the like, it can be recorded by the manner

25   such as the recording reservation to view the program

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later.

Figs. 40 show display conditions of the program

table display means 4 in the case of performing the above

recording reservation operation. In these drawings, if

5 the recording reservation button 136 is operated by

clicking in the program information picture 134 shown in

Fig. 40A to reserve the program for recording, a recording

reservation program table 139 is made as shown in Fig. 40B.

In this recording reservation program table 139, there are

10 provided recording relation columns 138 for displaying a

recording or recording reservation table. If recording

reservations are performed as to plural programs, in the

recording relation columns 138 of the recording

complementary-angle program table 139, program information

15 reserved for recording is displayed along the time. By

this manner, it becomes easy to distinguish the program

reserved for recording.

21st Embodiment

Fig. 41 is a block diagram showing the

20 construction of the twenty-first embodiment of a system

for processing program information according to the

present invention. In Fig. 41, the reference 1 denotes

program information storage means for storing received

program information, 2 does attribute input means through

25 which attribute information to be used as two-axes

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attributes of a program table and the others of attribute

information are input, 3 does program information

retrieval/classification means for retrieving or

classifying a program in program information on the basis

5   of input attribute information to make the program table,

and 4 does program table display means for displaying the

made program table. The reference 22 denotes program

image selection means, 20 does time measurement means, and

48 does viewed program information storage means. The

10   viewed program information storage means 48 is for

recording information of the program viewed by the

audience.   The program image selection means 22 registers

data to the viewed program information storage means 48 by

receiving an instruction from the program information

15   retrieval/classification means 3.

The operation of the system for processing

program information according to the twenty-first

embodiment having this construction will be described.

Figs. 42 are diagrams for illustrating the display

20   operation of the program table in the system for

processing program information according to the twenty-

first embodiment. In this twenty-first embodiment, at

first, the basic program table 101 is two-dimensionally

displayed on the program table display means 4 as shown in

25   Fig. 42A. At the position adjacent to the program table

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101 in the display picture, there are provided display

columns for the two-axes attributes determining the

construction of the program table displayed at present,

that is, present attribute display columns 104 and 105.

5   In the example of Fig. 42A, "time" representing the time

slot is displayed in the present attribute display column

104, "CH" representing the channel is displayed in the

present attribute display column 105, and "day of week" as

the other attribute information is displayed in the change

10   attribute display column 107. At the position (adjacent

to the right side) adjacent to the above program table 101,

there is displayed an operation button 140 for calling

"program having ever been viewed".

       Here, if the audience clicks the above operation

15   button 140, on the program table display means 4, as shown

in Fig. 42B, there is displayed a program table 141 in

which the program information display columns 109

corresponding to the programs having ever been viewed are

different in color from the other programs. If the

20   audience selects a certain program through the attribute

input means 2, the program information

retrieval/classification means 3 retrieves the program as

to the program image storage means 1 to display the

program information on the program table display means 4.

25   By this manner, the programs having ever been viewed

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become clear at a glance in the program table 141 and this

can be utilized for selecting the program wanted to view

next.

Fig. 43 is a diagram showing the user

5   classification program table 120 (already described with

reference to Fig. 17) when the user classification

operation is designated in the program table shown in Fig.

42A, and the construction of the program table is

basically the same as that shown in Fig. 17B. In this

10   embodiment, by performing the click operation of the

operation button 140 for calling the above "program having

ever been viewed", also in this user classification

program table 120, columns 142 for the programs viewed

last times are added to the lowermost columns and program

15   information of the programs viewed last times is displayed

in those columns 142. By this manner, as for the programs

inserted in the user classification, the distinction of

programs having ever been viewed or not yet being viewed

can easily be performed and this can be utilized for

20   selecting the program wanted to view next.

22nd Embodiment

Fig. 44 is a block diagram showing the

construction of the twenty-second embodiment of a system

for processing program information according to the

25   present invention. In Fig. 44, the reference 1 denotes

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program information storage means for storing received

program information, and 4 does program table display

means for displaying the made program table. The

reference 50 denotes program information classification

5   establishment means for establishing classification

information required for classifying programs, 51 does

program classification information storage means for

storing program classification information, and 52 does

program information classification means for classifying

10   programs in accordance with a predetermined rule. To the

program classification information establishment means 50,

for instance, program classification information is input

by the user or established at the time of constructing the

system. Program information 54 is stored in the program

15   information storage means 1 and program classification

information 55 is stored in the program classification

information storage means 51. The program information

classification means 52 includes adaptation degree

calculation means 53 for calculating the adaptation degree

20   of a program upon the classification operation.

The structure of program classification

information 55 will be described. Program classification

information 55 comprises, for instance, a set of a

representative word (example: fishing) representing the

25   meaning of the classification and a line of characteristic

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words (example: FISHING, spot, fishing, Fishing) for the

collation with program information. By collating these

characteristic words with program information, the

adaptation degree of each piece of program information

5   with the program classification information can be

calculated. For instance, the sum of the numbers of times

of the appearances of the characteristic words can be used

as the value of the adaptation degree. In the adaptation

degree calculation means 53, by comparing this value with

10   the threshold value of the adaptation degree established

as to the program classification, the set of program

information to be classified in program classification

information of a certain program can be specified. In

this case, as for one piece of program classification

15   information, all pieces of program information the

adaptation values of which exceed the threshold value are

classified. Fig. 45 is an image diagram showing the

process operation content of the classification method (or

classification operation) by the adaptation degree

20   calculation means 53. As shown in this drawing, as

program classification information 55, "representative

word: fishing" and "characteristic word: FISHING, secret

point, fishing, Fishing, sweetfish" are established. The

program information classification means 52 loads program

25   information 1 to 3 from program information each 1 and

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calculates the adaptation degrees as to respective pieces

of program information. As a result, the adaptation

degree of 4 is given to program information 1, the

adaptation degree of 1 to program information 2, and the

5 adaptation degree of 0 to program information 3.

Therefore, the threshold value established in the program

information classification means 52 and the adaptation

degree of each piece of program information are compared

with each other, and the result that program information 1

10 is classified into "fishing" and program information 2 is

also classified into "fishing" but program information 3

is not classified into "fishing", is obtained. Because

the classification of program information is performed by

such a classification method, there is also the case that

15 one piece of program information is classified into plural

pieces of program classification information. Fig. 46 is

an image diagram of the classification result of program

information by the program information classification

means 52. In classified program information (group) 56,

20 program information connected by a line to the same

program classification information represents that it

belongs the same classification. Program information in

which two or more lines are drawn from one piece of

program information represents that it is classified into

25 plural pieces of program classification information.

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Program classification information itself may be predetermined for the system, or established by the user with the program classification information establishment means.   They may also be mixed.

5   By the construction with including such program information classification means 52, program information 54 can be classified as to program classification information 55, the program table having the line of established program classification information as one axis

10   of the program table can be made and displayed on the program table display means 4.   On the other axis of the program table, the order of the adaptation degrees as to respective pieces of program classification information may be shown, or by showing the line of other pieces of

15   program classification information, the accuracy of the program can be grasped from plural points of view, and it can be grasped more accurately.

In any form of the program table, among the programs displayed therein, it becomes possible separately

20   to display only those classified into a certain piece of program classification information.

23rd Embodiment

Fig. 47 is a block diagram showing the construction of the twenty-third embodiment of a system

25   for processing program information according to the

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present invention. The program information processing

according to this embodiment has the construction that

program classification information extraction means 57 and

program classification information generation means 58 are

5   provided in place of the program classification

information establishment means 50 of the system for

processing program information according to the above

twenty-second embodiment. The program classification

information generation means 58 includes relative key word

10   extraction means 59. The other construction is the same

as the above twenty-second embodiment and includes program

information storage means 1, program table display means 4

for displaying the program table, program classification

information storage means 51, program information

15   classification means 52, and adaptation degree calculation

means 53. The program classification information

extraction means 57 obtains program information from the

program information storage means 1 and extracts data to

be program classification information from this program

20   information. The program classification information

generation means 58 extracts a characteristic word or the

like to be program classification information by the

relative key word extraction means 59 to make program

classification information. In this manner, in this

25   embodiment, the system for processing program information

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itself can generate program classification information in a self-complete manner.

In the operation of this twenty-third embodiment, a specified set of program information in program

5   information stored in the program information storage means 1, for instance, "program liked by a certain person" or the like is designated. A characteristic word is extracted from the designated set of program information by the relative key word extraction means 59, and by

10 establishing an appropriate representative word by the user, program classification information can be generated. There are various methods for the practical equipment of the relative key word extraction means 59.

By including such program classification

15 information extraction means 57 and program classification information generation means 58, a new piece of program classification information can easily be defined by user by designating a proper program group by the user so the trouble of designating a characteristic word can be

20 omitted. Because the characteristic word is extracted from real program information, there is also the advantage that it is easy to obtain program classification information capable of classifying the program more accurately.

25   24th Embodiment

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Fig. 48 is a block diagram showing the

construction of the twenty-fourth embodiment of a system

for processing program information according to the

present invention. In Fig. 48, the reference 26 denotes

5   transmission and reception means for transmitting and

receiving program information and program classification

information. To this transmission and reception means 26,

program classification information storage means 51 and

program table display means 4 are connected to constitute

10   a reception side terminal (that is, a user side terminal).

28 does transmission and reception means disposed

correspondingly to the above transmission and reception

means 26 for transmitting program information and program

classification information to that transmission and

15   reception means 26 and receiving them from that

transmission and reception means 26. To this transmission

and reception means 28, program information classification

means 52 is connected. Program information storage means

1 is connected to the program information classification

20   means 52. The program information storage means 1 and the

program information classification means 52 constitute a

server side terminal.

Because of having this construction, the system

for processing program information that includes the

25   program information classification means 52 according to

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this embodiment and is constructed to classify program

information, can be used in the surroundings that the

server and the user terminal cooperate with each other.

In this case, program classification information is

5   transmitted from the user side terminal to the server side

terminal. Program classification information to be

transmitted may be any of those predetermined in the

system, established by the user, and extracted from the

program information group designated by the user.

10   The server side terminal that received program

classification information classifies the program

information groups stored in the program information

storage means 1 in accordance with those pieces of program

classification information. By transmitting only program

15   information classified into program classification

information transmitted from the user side terminal, to

the user side terminal to be displayed on the program

table display means 4 in the user side terminal, in

comparison with the case that all program tables are

20   transmitted, the data quantity to be transmitted can

remarkably be decreased.

As described above, according to the present

invention, because the system for processing program

information is constructed to include the program

25   information storage means for storing program information,

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and the program table display means for two-dimensionally

displaying the program table following two axes in

accordance with two attributes among attributes given to

each piece of program information, to make the program

5   table for two-dimensionally displaying the programs with

two axes of free attributes, for the audience, the program

tables of various constructions can be displayed on the

display means at will and in respective program retrieval

operations, the program table easy to look for the program

10   can be obtained. The effect that the objective program

can be found in a short time by coming up with ideas for

the extraction of the program or the like, and the effect

of being useful for making the broadcast view plan of

himself are obtained.

15   While the preferred embodiments of the present

invention have been described in the above, various

variations and modifications may be made without departing

from the scope of the invention claimed hereinbelow.